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ORIGINAL ARTICLES.

TREATMENT OF PUERPERAL ECLAMPSIA.

BY J. B. KILLEBREW, M.D.,
OF MOBILE, ALA.

THE causes of puerperal eclampsia are usually divided into the predisposing, the essential and the exciting. From a scientific point of view the study of all these is of interest, but from a practical standpoint the greatest interest is centered in the essential cause, because it is by preventing or removing this that the physician is able to prevent or cure the disease.

Numerous theories as to this essential cause of puerperal eclampsia have been advanced from time to time, practically all of which have now given way to that of toxemia. Just what this toxic agent is or where and how it is manufactured; whether it is produced by the normal processes of metabolism or is due to some condition existing only during pregnancy; or whether it is of bacterial origin has never been satisfactorily demonstrated. The general characteristics of the disease resemble so closely those of other diseases known to be produced by a condition of toxemia that this theory must be accepted until a better one is brought forward.

There seems to be some difference of opinion as to the part played by nephritis in the etiology of this disease, whether it is a cause of the disorder or only an effect. Undoubtedly it may be either or both. At all times, in health and in disease, there is produced in the organism, by the normal processes of metabolism, a certain amount of toxins. These toxins are eliminated by the excretory organs. So long as these organs are capable of eliminating the poisons as rapidly as they are manufactured there is no accumulation, hence no symptoms of toxemia. But just so soon as the amount generated becomes too great for the organs to eliminate accumulation takes place and symptoms of toxemia appear.

The kidneys are the most important excretory organs of the body. When they are diseased their capacity for work is diminished. Under ordinary conditions of life they may still be able, with the help of the other excretory organs, to eliminate all toxins from the system. But when pregnancy occurs the amount of toxins produced is increased. This increase may be so great that the united efforts of the excretory organs, with the most important of them—the kidneys—in a crippled condition, are incapable of eliminating them as rapidly as generated; as a result accumulation takes place and symptoms of toxemia occur. Even perfectly healthy organs are capable of doing only a certain amount. There is a limit to their capacity for work and when the amount of toxins produced is too great for them to eliminate there will be an accumulation and toxemia will supervene. Naturally a patient with nephritis is more liable to eclampsia than one with healthy organs; but there is no reason why a patient with healthy kidneys may not have eclampsia and no reason why one with diseased kidneys may not escape it. At the beginning of pregnancy a woman may have perfectly healthy kidneys; but, by reason of the increased amount of work thrown upon them to eliminate the increased amount of toxins produced and the long continued constant irritation produced in them by the egress of the toxins, they are liable to become inflamed and nephritis results. For the same reason an already existing nephritis may become aggravated. It seems clear, then, that nephritis may be either a cause or an effect of toxemia, or both, first being an effect and then a cause. It is no doubt a predisposing cause of eclampsia, but it is not an essential cause. In most cases of eclampsia the accumulation of the toxins is gradual, as is evidenced by the fact that the onset of the symptoms is gradual. There are usually pronounced precursory symptoms before the occurrence of convulsions. In some cases the toxemia is never great enough to produce convulsions, but only those symptoms indicative of a mild degree of poisoning. In some cases, the great minority, the accumulation seems to be rapid. The onset is then quite sudden and frequently without any of the precursory symptoms, the convulsions being the first symptoms observed.

As the phenomena characteristic of eclampsia are due to an excess of toxins in the system, which toxins are produced in the body, the most rational method of treatment would seem to be to arrest the formation of these bodies. But as it is not known what they are, where or how they are formed, our efforts along this line cannot be successful until such information is obtained. As these poisons are undoubtedly eliminated by the excretory organs the best practical treatment is that which will dilute the toxins circulating in the blood as much as possible and at the same time increase the activity of the excretory organs. The best agent for accomplishing this is normal salt solution. The method of employing it will depend upon the severity of the symptoms present.

A pregnant woman should be constantly under the observation of her attending physician especially after the sixth month. The urine should be examined frequently for albumin. If it is

found the utmost vigilance should be observed. She should be instructed to report at once the appearance of any of the premonitory symptoms of eclampsia, such as violent or continuous headache; any disturbance of vision, especially "flashes of light," dizziness, epigastric pain nausea and vomiting, marked mental irritability or muscular tremors. If any or all of these phenomena make their appearance, whether the urine contains albumin or not, it is a strong indication that toxemia is present and that convulsions are impending; therefore preventive treatment should be begun at once. The patient should live a quiet life, taking a moderate amount of exercise, but never enough to cause fatigue. All excitement should be avoided. The diet should consist of liquids, of which milk should form the principal part. Albuminous foods should be largely restricted. Large quantities of water should be drunk. The bowels should be kept open by the administration of a mild laxative. *Do not purge.* One large, loose movement each day is sufficient. The skin should be kept active by a daily warm bath, after which the patient should be wrapped in a blanket and put to bed where she should remain for an hour or two. If the pulse is hard and tense it may be softened by the administration of nitroglycerin. It also causes an increase in the amount of urine secreted.

While these measures are of undoubted value, they are secondary in importance to the use of normal salt solution, which as a prophylactic agent should be given as high enemata in quantities varying from 1 to 3 pints once or twice in every twenty-four hours. The quantity given should be just as much as the patient can retain. These enemata are absorbed by the mucous membrane of the colon, enter the circulation, dilute the blood, diluting the toxins contained therein. They also stimulate the kidneys and skin to greater activity, thereby causing an increase in the elimination of the toxins. By a conscientious employment of these measures many patients showing evidence of approaching convulsions can be successfully carried through gestation to full term and delivered of a living child without the appearance of convulsions.

If, in spite of these prophylactic measures, the symptoms grow progressively more severe and convulsions occur, or if the patient is having convulsions when first seen, more active measures must be taken. The convulsions should be controlled with inhalations of chloroform. One of the superficial veins at the elbow should be exposed and opened. The dark toxin-laden blood must be allowed to flow from the distal end of the divided vein while normal salt solution at the temperature of about 100° F. is injected into the proximal end. The amount of blood withdrawn will vary with each individual, as will also the amount of normal salt solution injected. Ordinarily from 12 to 24 ounces of blood should be withdrawn and from two to three times that amount of salt solution injected.

The question will arise as to whether bleeding should be practised in all cases. I would say that all patients except those who are extremely anemic should be bled. The withdrawal of a portion of the blood from almost any of these patients will act beneficially if some other circulating fluid is introduced to remedy the loss. Unless this fluid is introduced to take the place of the blood withdrawn, undoubtedly it would be better to bleed only those patients who are very plethoric. In the very anemic it is better to introduce the normal salt solution without bleeding. The withdrawal of blood from these patients certainly removes some of the toxins from the system and makes room in the blood-vessels for the salt solution that is to be introduced. This salt solution dilutes the remaining blood and consequently the toxins contained therein. It acts as a circulating medium and stimulates the excretory organs.

In most of the cases of eclampsia that have been treated by the use of normal salt solution it has been administered either by hypodermoclysis or by enteroclysis. The latter method is entirely too slow to be depended on after the convulsions have begun. Intravenous injection is preferable to hypodermoclysis, because it is more certain and more rapid and is not more dangerous. If the patient is edematous and the circulation sluggish, the salt solution introduced beneath the skin will probably never be taken up by the lymphatics. There is practically no danger in introducing the solution directly into the vein and the results are certain and rapid.

The uterus should be emptied immediately. If the cervix is not fully dilated or nearly so, it must be manually dilated if possible. If this is impossible on account of rigidity, recourse must be had to incisions as advised by Dührsen, which is not now the formidable operation it was before the technic of vaginal work was perfected.

The order in which these means should be employed is as they have been given: (1) Control convulsions with chloroform; (2) bleed the patient and give intravenous injection of normal salt solution; (3) empty the uterus.

Perhaps most operators empty the uterus before giving the infusion of normal salt solution. It frequently requires as much as two hours or even more to empty the uterus, while the infusion or normal salt solution can be given in a few minutes. In some cases the toxemia is so profound when the patient is seen that she will be dead by the time the uterus can be emptied. In these cases there is an almost complete absence of activity on the part of the excretory organs. It seems to me that it is better to give the intravenous infusion of salt solution first and allow it to be doing its work while the uterus is being emptied. I saw a patient a few months ago who died within four hours after the first convulsion. The physician in charge reached her two hours after they began. He first emptied the uterus. When this was accomplished life was almost extinct. Preparations were made at once to give

an infusion of salt solution, but the patient died before the vein could be found.

I recall another instance where the patient had seventeen convulsions during a few hours. The surgeon in charge at once gave an intravenous infusion of normal salt solution. No other treatment was given. The patient did not have another convulsion and was perfectly conscious in a few hours. The uterus was emptied the next day. If the physician in charge of the first patient had given the infusion before he emptied the uterus the result might have been different. If there are enough assistants at hand both operations can go on at the same time with great advantage to the patient's condition.

After these measures have been taken the colon should be thoroughly irrigated. If the convulsions recur and are mild they should be controlled with chloral given in an enema. Should they again become severe another infusion of normal salt solution should be given. This will rarely be necessary. During convalescence the patient should be confined to bed and the bowels and other excretory organs kept active. The diet should be restricted to liquids for a week and then gradually increased as the physician thinks best. A high saline enema should be given twice daily. All excitement, worry and depressing influences are to be avoided. Callers should not be allowed and the nurse should make special efforts to keep the patient in a buoyant frame of mind.

Veratrum viride and chloral have given good results in the practice of many physicians. I have not had any experience with the former. The latter will control the convulsions in many cases, but it does so more by diminishing the excitability of the nerve centers than by removing the causes of the convulsions, although it probably causes some increase in the secretion of urine. Practically the same may be said of veratrum viride. Pilocarpin is dangerous because of the marked depression on the heart and its use is never justified in this disease. Morphine undoubtedly has some temporary effect upon the convulsions, but it should never be used. Like chloral, it unquestionably has a quieting action on the nerve centers, but its effects on the various secretions are important and not to be underestimated. Instead of assisting in the removal of the causes of the convulsions, it retards it by paralyzing all the excretory organs with the possible exception of the skin.

That all methods of treatment heretofore applied in this disease have been unsatisfactory is evinced by the fact that the mortality has been about 25 per cent. Certainly this is sufficient evidence to show that there is room for improvement. Statistics based on the method of treatment given in this article are not large enough to form a very correct idea as to its efficiency, but it is a rational, common-sense method of procedure and offers a hope of better results in the future, especially when improvements in technic have been thoroughly worked out.

OBSERVATIONS UPON THE QUARTAN MALARIAL PARASITE AND UPON THE STAINING REACTIONS OF THE TERTIAN, QUARTAN AND ESTIVO-AUTUMNAL PARASITES.

By CHARLES F. CRAIG, M.D.,
OF SAN FRANCISCO, CAL.;
ACTING ASSISTANT SURGEON, U. S. A.; PATHOLOGIST AND BACTERIOLOGIST TO THE U. S. A. GENERAL HOSPITAL, PRESIDIO OF SAN FRANCISCO.

THE occurrence of several cases of quartan malarial fever at the United States General Hospital at San Francisco in soldiers returning from the Philippines has given the author an opportunity of studying with care this comparatively rare organism, and the facts observed are embodied in this paper.

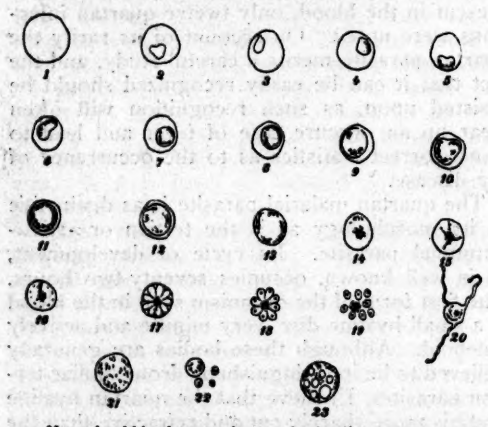
Quartan malaria is the most rare form of malarial infection. Of nearly two thousand cases of malaria, the records of which have been preserved and in which the malarial parasites were present in the blood, only twelve quartan infections were noted. On account of its rarity the quartan parasite merits a careful study, and the fact that it can be easily recognized should be insisted upon, as such recognition will often clear up an obscure case of fever and lead to more correct statistics as to the occurrence of the disease.

The quartan malarial parasite is as distinctive in its morphology as is the tertian or estivo-autumnal parasite. Its cycle of development, as is well known, occupies seventy-two hours. The first form of the organism seen in the blood is a small hyaline disc, very minute and actively ameboid. Although these bodies are generally believed to be indistinguishable from similar tertian parasites, I believe that the quartan hyaline body is more sharply cut and refractive than the tertian, while the invaded corpuscle is of a more greenish hue. In a few hours these small hyaline organisms have grown larger, are less actively ameboid and a few granules of dark brown pigment may be seen within them, generally at the border of the organism. The shape of the organism is either round or triangular, the ameboid motion being very sluggish. The pigment is motionless. I have never seen a pigmented organism which was actively ameboid. The organism is sharply outlined and refractive, while the invaded corpuscle is greenish in color and not swollen. Even at the early stage I believe it is possible to distinguish this form from the tertian parasite, which is dim of outline, of irregular bizarre shape, with active pigment and inhabiting a pale, swollen corpuscle.

In twenty-four hours the distinguishing features of the quartan parasites are fully developed. The organism is sharply cut and looks often as though it were stamped into the blood corpuscle; it is refractive, and its protoplasm often presents a peculiar, finely granular appearance; the pigment is dark brown in color, in the form of rather coarse granules and is generally collected around the edge of the organ-

ism, sometimes forming an almost complete wreath around it; the pigment is absolutely motionless. The shape of the organism at this stage of development is usually triangular, ovoid or round, and it is not ameboid. The invaded corpuscle is smaller than the healthy ones and is of a darker green color. All these characteristics clearly distinguish the quartan from the tertian parasite, which is less sharply cut, and refractive, is more or less ameboid, very irregular in outline, possessing lighter brown, more finely granular pigment, which is always motile, while the infected corpuscle is pale and often greatly swollen.

At the end of thirty-six hours all the phenomena noted are more pronounced, the organism filling about two-thirds of the corpuscle, which seems to be retracting about it; the pigment is increased in amount, but is motionless and collected in rough masses at the border of



1, Normal red blood corpuscle; 2 and 3, hyaline quartan parasites; 4 to 12, various stages in the growth of the pigmented quartan parasite; 13, full-grown quartan parasite; 14, 15 and 16, presegmenting forms of the quartan parasite; 17, segmenting quartan parasite inside red corpuscle; 18, segmenting quartan parasite, the so-called "marguerite form"; 19, segmenting quartan parasite; 20, flagellate quartan parasite; 21, large extracellular quartan parasite; 22, fragmenting quartan parasite; 23, vacuolated quartan parasite.

the organism which is not ameboid. The growth of the organism from this time on is very slow, and it is not until a few hours before segmentation that the full-grown bodies are observed. Such an organism is circular in shape, bordered by a thin greenish layer representing the remains of the infected corpuscle; with numerous clumps of dark brown motionless pigment, not now entirely confined to the periphery of the organism, but scattered through it, the protoplasm of the organism being finely granular in appearance. In many instances segmentation was seen to take place even before the corpuscle was entirely destroyed, the pigment collecting toward the center of the organism and six or more segments appearing within the corpuscle. Most commonly, however, the pigment, in the full-grown parasites collects at the center in a solid, almost black mass, and about the same time all trace of the infected corpuscle disappears, the organism being apparently extracellular. In a short time radial striations are observed shooting out from the central pigment, and these, joining at their extremities, form from six to fourteen oval segments; as a rule, the number of segments does not exceed ten. They are arranged regularly, at first, around the central pigment, the so-called "marguerite forms," but soon they begin to separate and disappear, the pigment at the same time disintegrating and becoming diffused. The number and the beautifully regular arrangement of the segments would alone serve to distinguish this stage of the quartan from the corresponding tertian parasite, but the quartan segments are also more oval in shape, more refractile and somewhat larger. The star-like arrangement of the pigment between the segments, which Thayer considers so characteristic, is generally observed, but I have seen exactly the same arrangement of pigment in tertian segmenting forms; it is probably simply an accidental occurrence, doubtless more common in the quartan parasite, but not at all peculiar to it.

Differentiation from the Tertian Malarial Parasite.—The pigment in the quartan organism is only motile in the very young forms, is always dark brown in color and occurs in round granules or in irregular masses of such granules. It generally occupies the periphery of the organism and tends to become collected at one portion, but in the full-grown parasites the granules and blocks of pigment are scattered throughout the protoplasm.

The outline of the quartan parasite, especially after the first twenty-four hours, is always very sharply cut and appears as though stamped into the corpuscle; the shape of the organism is either round, oval or triangular, and only in the very early hours of its development does it send out ameboid processes of any size; later the ameboid movement consists of a gentle sluggish undulation of the periphery of the organism and even this ceases after the first thirty-six hours.

The protoplasm is refractive and often, on close inspection with a good light and high power, the peculiar, finely granular appearance which has been mentioned is noted. This, together with the sharply cut outline and blocks of pigment, brings to mind very forcibly the similar appearance of the ovoid bodies and crescents of the estivo-autumnal parasite. Indeed, the organism during every stage of its development resembles much more closely the tertian estivo-autumnal parasite as it occurs in splenic blood than it does the ordinary tertian organism. The corpuscles which are invaded by the quartan parasite are invariably somewhat shrunken and greener in color than the healthy corpuscles, but are not often crenated.

From this résumé of the characteristic features of the quartan parasite as it has been observed here, it will be seen that it can easily be distinguished from the ordinary tertian parasite by its cycle of development covering about seventy-two hours, by its smaller size, sharply

cut, more regular outline, refractive, finely granular protoplasm, motionless, darker brown pigment, collected peripherally, lack of or very sluggish ameboid motion, small number of segments which are more refractive and oval in outline.

Staining Reactions of the Tertian, Quartan, and Estivo-Autumnal Malarial Parasites.—The following observations upon the staining reactions of the malarial parasites are the results of study of hundreds of stained specimens, and the methods advocated may be depended upon when stained specimens of blood are desired.

There are many ways of staining the parasites of malarial fever, but a description of a few of the most useful is all that will be attempted at this time. The blood-smears are prepared by carefully cleaning the lobe of the ear, puncturing it with a sterile needle or lancet, touching a clean cover-glass to the resulting drop of blood, and placing another cover-glass over it; the two are then slid very gently and carefully apart and the smear allowed to dry. Care should be taken not to get too much blood upon the first cover-glass and to use no pressure in sliding the glasses apart. After drying, the smears are allowed to harden in equal parts of alcohol and ether for half an hour, when they are ready to stain. The plasmodia are stained by nearly all basic aniline dyes, but not by the acid dyes. For staining I use either Romanowsky's or Chenzinsky's method, preferably the latter. Romanowsky's method is as follows: Two solutions are used—No. 1, a saturated aqueous solution of methylene blue; No. 2, a one-per-cent. watery solution of eosin.—The methylene-blue solution should be at least one week old. The staining solution is made fresh each time it is used and consists of one part of the filtered methylene-blue solution added to two parts of the eosin solution and thoroughly mixed. The smears are placed face down upon this solution and allowed to stain for from one-half to three hours or more. The best results are obtained after about two and a half hours' staining. By this method the colored corpuscles are stained red by the eosin and the parasites a deep blue by the methylene blue. Romanowsky believed that the nuclear chromatin stained a violet color, but I have never been able to confirm his observations. Although very beautiful stained specimens can be secured by this method, I much prefer the method of Chenzinsky, for the reason that it gives a more natural appearance. By Romanowsky's method, and in fact, by most methods, the coloring is very vivid, especially that of the red corpuscles by eosin, whereas in Chenzinsky's method the red corpuscles are stained more dimly, appearing almost natural in color, while the parasites are stained a fine blue, fully as well as by any other method.

Chenzinsky's method is as follows: A concentrated watery methylene-blue solution, diluted one-half with water, is added to an equal amount of a one-half-per-cent. solution of eosin in sixty-per-cent. alcohol. This solution is bottled and kept and is improved in staining qualities by age. The specimens are stained with this solution for five minutes and then washed in water, dried and mounted in Canada balsam. Much better specimens are obtained by staining for two hours or more, and I have secured very fine ones by leaving the smears in the staining solution over night. There are numerous other methods of staining the malarial parasites, but these are the most satisfactory and useful.

A word as to the use of stained preparations for diagnostic purposes: I am aware that a few authorities use stained preparations almost entirely for diagnosis, but I believe that it is a cumbersome and very unreliable practice. Where it is impossible to keep a specimen of blood fresh enough to look at under the microscope, the use of stained preparations is, of course, necessary; but when it is possible to examine the blood fresh, it is always to be preferred, as it is infinitely more exact and satisfactory. I have seen many cases in which the fresh blood showed numerous ring-forms of the estivo-autumnal parasites, yet in which smears taken at the same time and stained most carefully showed either none or at most a very few dimly colored parasites. There is also the danger of mistaking stained granular matter or débris lying upon the corpuscles for the small estivo-autumnal parasites in the smears, and this mistake can be very easily made by one who is unaccustomed to examining such preparations. The only strictly scientific way of diagnosing the various forms of the malarial parasites is by the microscopical examination of the fresh blood, and after all most specimens of blood will keep in a suitable condition for examination, under ordinary circumstances, for six, eight, or even a greater number of hours, despite the text-book statements to the contrary.

Before considering the staining reactions of the plasmodia a brief note as to the most recent staining method devised by Futcher. It is to be recommended whenever speed is desirable in staining or when the fresh blood cannot be examined and a speedy diagnosis is essential. It is as follows: The smears are hardened in a one-per-cent. solution of formalin in ninety-per-cent. alcohol for from a half to one minute. They are then dried and stained for twenty to thirty seconds in the following solution of thionin, known as Marchand's: Saturated solution of thionin in fifty-per-cent. alcohol, 20; two-per-cent. solution of carbolic acid, 100. The solution should stand several days before using. After staining, the specimen is washed in water, dried, and mounted in Canada balsam. The red corpuscles are stained a very slight greenish hue, while the parasites are deep violet in color. Care should be used not to stain for too long a time, and also not to allow the formalin solution to act long, as it seems to cause a degeneration and vacuoliza-

tion of the red cells. The method stains the estivo-autumnal rings very satisfactorily.

Staining Reactions of the Tertian and Quartan Malarial Parasites.—In properly stained preparations of the tertian and quartan parasites two distinct portions can be made out—a deeply staining ectoplasm and a dimly staining endoplasm. The endoplasm is really the nucleus of the parasite, and sometimes there can be seen, situated eccentrically, between the ecto- and endoplasm, a very deeply stained spot, the nucleolus, and this contains the greater part of the chromatin substance. These appearances are best observed in half-grown parasites which are not undergoing marked ameboid change of form. The ectoplasm contains the pigment. The nucleus is generally round or oval in shape and eccentric in situation. The very youngest tertian and quartan parasite is represented by a blue ring, the center of which is almost colorless. At some portion of the junction of the central colorless area and the blue-stained ring may often be seen a deeply stained dark blue dot. Here we have the clearly differentiated ectoplasm, stained blue, the endoplasm or nucleus, almost unstained, and the deeply stained nucleolus. As the organisms grow, pigment granules appear in the ectoplasm or stained portion, and by reason of the change of shape due to the ameboid motion the central colorless nucleus is not easily made out, it being often situated in one of the pseudopodia. By reason of the ameboid changes in the shape of the parasite and the situation of the pseudopodia at different levels in the infected corpuscle, it often appears as though there were two or more stained parasites within one corpuscle. In the stained ectoplasm both deeply and dimly stained areas can be distinguished. These occur without any regularity and are probably due to different quantities of the stained protoplasmic substance collected at certain places. It will often be noticed that the extremities of the pseudopodia are stained much more deeply than other portions of the parasite. Very seldom is any pigment seen within the clear, almost unstained nucleus. Often, however, young forms are seen which stain almost uniformly throughout, no trace of a nucleus being visible.

As the parasites grow larger and approach full development, the distinction between the ectoplasm and the nucleus is gradually lost and is often represented simply by a more or less irregular, dimly stained area free from pigment. Often, even this appearance is absent and the parasite consists of a pretty uniformly stained pigmented mass of protoplasm. The small, deeply stained spot or nucleus always disappears before the parasite attains its full growth and is by no means constant even in the young forms. Just before segmentation, when the pigment has collected in a clump, the stained tertian or quartan parasite presents a peculiar, dotted or mottled appearance, due to small, very deeply stained dots or spots scattered through the more deeply stained protoplasm of the parasite. As segmentation advances and the parasite begins to split up, it will be seen that these darkly staining dots are in reality the nucleoli of small dimly stained rings or young tertian or quartan parasites and correspond exactly to the young stained forms first described.

The pigment does not stain appreciably in well prepared specimens, and the parasite which shows the centrally situated clear, very dimly staining area or nucleus, is always collected within the stained ectoplasm. This agrees well with the well-known fact that in the fresh specimen the pigment granules are almost always collected at or near the periphery of the organism in its young pigmented stage.

Staining Reactions of the Estivo-Autumnal Malarial Parasites.—The staining reactions are similar for both the quotidian and tertian estivo-autumnal parasites.

The "ring-forms" of the estivo-autumnal parasite show a more or less deeply stained outer position, a round, or oval unstained central position, and a very deeply staining minute dot, situated at some point at the periphery of the stained ring. As the parasites grow, the endoplasm stains faintly, and the distinction between it and the ectoplasm becomes less marked. The deeply staining dot disappears, and just before segmentation the parasites stain a uniform blue throughout. The pigment granules, if present, are collected in the stained outer portion in the half-grown parasites and at or near the center just before segmentation. The individual segments stain as do the intracorpuscular rings, the only difference being that they are smaller.

Staining Reactions of the Crescents and Ovoids.—The crescent form of the estivo-autumnal parasites presents many interesting staining phenomena. In those crescents in which the pigment is collected near the center, the organism as a whole takes a rather dim blue color, the poles staining much more deeply, while the center in which the pigment lies is often unstained or but dimly stained. At each pole, as a rule, may be seen a very deeply stained semilunar portion, extending to its periphery and covering the horns of the crescent. The appearance presented is that which would result had each horn of the crescent been dipped into a darker staining fluid and withdrawn. Between the deeply stained horns of the crescent and lying within the more dimly stained protoplasm are often seen very deeply stained round or oval spots, irregularly distributed. In some crescents these deeply stained spots are very distinct and occupy a large part of the protoplasm of the crescent. As a rule, the area in which the pigment lies and that immediately surrounding it stain very faintly, or not at all, but it is not rare to see a darkly stained belt or band passing through the center of the crescent and seeming to divide it into two parts. This appearance,

however, is not common and does not by any means prove the dual nature of the crescent. Surrounding the crescent, in the majority of instances, is a narrow eosin-stained border, believed to be the remains of the red corpuscle in which the crescent was developed. This red-stained border does not always, however, entirely surround the crescent; sometimes it is observed only between the two horns, forming the so-called bib; sometimes it is absent there and present over the convex portion of the crescent; sometimes it can only be seen covering the horns or one horn of the crescent. It is often observed to be broken or ragged in outline and interrupted in places, thus suggesting the gradual disintegration of the red cell. Crescents are often observed which do not show any eosin-stained border, and in such cases we may assume that the destruction of the red cell is complete and the crescent is free in the blood plasma.

While the above description applies to the majority of stained crescents, many exceptions occur. Quite often, crescents are observed stained almost uniformly throughout; others do not present the deeply stained spots or polar staining; others stain very dimly at one pole and deeply at the other; in fact, it would be almost impossible to describe all the variations which may occur, but in the vast majority of examinations of stained crescents the description given will be found correct. There is no evidence of a nucleus in crescents. The ovoid bodies stain exactly as do the crescents, so far as I have been able to observe, save that the polar staining is not so pronounced.

In closing this article the author wishes to express his thanks to Col. A. C. Girard, the commanding officer of the Hospital, for his interest and enthusiasm in the study of tropical diseases and for the uniform encouragement which he has invariably given him in his work.

IS LIVING ANIMAL TISSUE CAPABLE OF NEUTRALIZING THE EFFECTS OF STRYCHNINE AND VENOM? AN EXPERIMENTAL STUDY.[1]

BY S. J. MELTZER, M.D., AND G. LANGMANN, M.D., OF NEW YORK.

IN an article entitled "A Contribution to the Knowledge of the Neutralization of Poison" (*Ein Beitrag zur Lehre von der Entgiftung*) Drs. v. Czyhlarz and Donath, of Nothnagel's Clinic in Vienna, have recently published in the *Centralblatt für innere Medizin* (No. 19, 1900) a communication which attracted considerable attention. They have tightly constricted a posterior extremity of guinea-pigs and injected effective doses of strychnine in its distal end, and found that when the ligature was removed after an hour or later, the characteristic effects of strychnine were not produced. The authors interpret their observation by the strained assumption that by the prolonged intimate contact of the tissue with the poison the latter becomes "fixed" or neutralized. They refer also to the use of ligature in cases of snake-poisoning and suggest that the favorable effect of this therapeutic procedure might be due chiefly to the fixing of the venom by the animal tissues.

The fixing or binding of toxins by the cells or fluids of the animal body is now quite a familiar idea, its far-reaching extension to all kinds of vegetable and animal poisons should, however, certainly not be accepted without conclusive proofs.

The statement made in Weir Mitchell's older writings, that a patient died from a snake-bite two hours after removal of the ligature which had been tightly applied for sixteen hours, was the incentive for us to test, at first on venom, the assumption made by v. Czyhlarz and Donath. However, the results which we obtained in these experiments induced us to repeat the experiments of the above-mentioned authors with strychnine. We are going to report here briefly the findings of these experiments with a short discussion of their proper interpretation.

Experiments with Venom.—We have injected the venom of the rattlesnake (*Crotalus horridus*) into one of the posterior extremities of rabbits and guinea-pigs. Death is here the only sure sign of the poisonous effect. All other symptoms are not sufficiently definite to be used in experimental comparisons. We have therefore in our experiments measured the effect of the poison chiefly by the time which elapsed between injection and death. The fatal dose was established every time by a control-experiment, although we knew from former experience that a dose of 0.03 gram of fresh poison generally kills a rabbit in from three to four hours. Guinea-pigs require a dose three to four times as large as that which is fatal for the rabbit.

Our experiments permit the conclusion that temporary ligation of the leg in which, peripheral to the constriction, a fatal dose of venom was injected as a rule retards the fatal outcome by four to ten hours. In some cases life was prolonged for one day and exceptionally even for a few days. The longer the leg remained ligated the longer was death deferred and the more severe were the local reactions, such as hemorrhagic edema, abscesses, gangrene, etc. When the leg was constricted for a few hours and the venom injected soon after removal of the ligature, the fatal outcome was also considerably postponed.

We can say that our experiments with snake-poison indicate in a general way that venom does not become neutralized by animal tissue, but that a ligature retards its resorption into the circulation on account of the impairment of the absorbing capacity of the tissues of the leg caused by the prolonged constriction.

It must, however, be admitted that the general question whether poison becomes neutralized by

[1] From the Pathological Laboratory of the College of Physicians and Surgeons, Columbia University, New York.

living tissue cannot be properly decided by experiments with venom. It could be claimed, in the first place, that in this case the poison is not sufficiently fixed by the tissue, because the latter loses a great deal of its vitality immediately on coming in contact with the venom; a supposition which seems, indeed, to be sustained by the appearance of local inflammatory reactions soon after the injection of this poison. Furthermore, it could even be assumed that the venom does become neutralized, but death results finally not from the venom but from the resorption of toxic products from the greatly disintegrated tissues of the leg; an assumption which seems to hold good for some late deaths occurring after snake-poisoning.

Experiments with Strychnine.—The facts contained in the communication of v. Czyhlarz and Donath regarding the influence of the ligature upon strychnine-poisoning would greatly gain in importance if it would hold good for all or, at least, many animals and when even comparatively large doses of strychnine are employed. The wording of the statement made by these authors seems to imply such an anticipation, although they have apparently experimented only with guinea-pigs, an animal not very sensitive to the effects of strychnine, and have not even stated what doses they employed in their experiments. In our experiments we have employed, in addition to guinea-pigs, rabbits and frogs. The last are very sensitive to strychnine. Smaller doses could be employed on them, thus offering the tissue a still better chance for complete neutralization of an effective dose. Besides, the hind leg of a rabbit is many times the size of that of a guinea-pig and has at its disposal much more tissue and therefore readier means to conquer a poisonous dose of strychnine. In some cases we have also employed massage in order to bring the poison in intimate contact with a wide area of the tissue of the constricted extremity. In all our experiments we employed sulphate of strychnine in one-per-cent. solution.

Experiments on Frogs.—When the dose of strychnine injected into a posterior extremity of these animals amounted to 0.0002 gram the ligature had apparently no influence at all on the poisonous effect. With a dose of only 0.0001 gram the tetanus appeared eight to ten minutes later than in the normal frog used for control, and was also less violent and of shorter duration. Doses smaller than 0.0001 gram had no reliable characteristic effect even in normal unligated frogs. Briefly stated, the results were: The ligature had no influence at all upon doses above the minimum; the effect of a minimum dose of strychnine was retarded a little but never abolished.

Experiments on Rabbits.—In the experiments on these animals the negative results were still more pronounced. Doses of strychnine amounting to 0.001 gram pro kilo rabbit produce in an animal whose leg was previously constricted a tetanus of the same intensity and after the same lapse of time as in a normal animal used for control. Doses less than 0.001 gram pro kilo do not have uniform characteristic results in control-animals either. Even a simple retarding effect of the ligature has not been established.

The experiments on frogs and rabbits have shown pretty conclusively that the tissues of these animals at least do not neutralize any dose of strychnine, or, at least, that such a neutralization is not demonstrated by the method of investigation employed by us in repetition of the experiments of v. Czyhlarz and Donath.

Our experiments, however, cannot be considered as a contradiction to the statements of the above-mentioned authors, inasmuch as they have derived their observations from a study upon guinea-pigs whose tissues perhaps possess the special property of neutralizing strychnine. We might even go so far as to assume that the well-known greater resistance of guinea-pigs to the effects of strychnine might be due just to this special capacity of the tissue of guinea-pigs to fix certain amounts of strychnine. To get more light on this interesting question we have carried out a series of experiments on guinea-pigs, studying the effect of the ligature under different conditions and varying doses of strychnine.

Experiments on Guinea-Pigs.—Doses of 0.001 gram do not produce characteristic effects in animals weighing 250 grams, the average weight of a guinea-pig. A dose of 0.002 gram brings out in a normal animal a characteristic tetanus in a few minutes, but upon such a dose the ligature has no perceptible influence; the tetanus appears with the same intensity and at the same time in a constricted animal as in an animal without previous ligation. However, the effective minimum dose lies between the two mentioned doses; it is 0.0015 gram; and with this dose we have repeatedly established the fact that in an animal whose leg was temporarily constricted, in the great majority of the experiments, the strychnine brought out no characteristic effects, and even in the few exceptions the tetanic outbreak was of a very mild nature; while in the control-animal a similar dose had the characteristic effect. We can thus say that we have confirmed the statement of v. Czyhlarz and Donath as far as the point of fact is concerned, namely, that a ligature is capable of annihilating the effect of strychnine, but with the restricting modification that this statement applies only to guinea-pigs and to minimum effective doses. We may also express the results correctly by saying that the ligature reduces an effective minimum dose to an ineffective submininum.

But does this mean that in these cases the entire dose of strychnine remains in the leg and none becomes absorbed into the circulation? To throw light on this question we made the following two kinds of experiments. First, in such ligated guinea-pigs in which after removal of the ligature the injection of 0.0015 gram remained without effect, we soon injected into another part of the body 0.001 gram, *i. e.*, a sub-

minimum dose which would otherwise have had no effect, and this injection brought out in a few minutes characteristic convulsions. That means that from the ligated leg enough strychnine was absorbed to increase the newly-injected subminimum to an effective minimum dose. This amounts to an absorption from the leg of at least 0.0005 gram, about one-third of the injected dose.

In a second series both posterior extremities were simultaneously ligated and in each 0.0015 gram of strychnine was injected. In these cases a well-characterized tetanus appeared on removal of both ligatures. In these cases it appears that at least one-half of the injected quantities were absorbed from the legs. Moreover, the mere fact that the ligature does not have any influence upon doses of 0.002 gram seems to demonstrate that of this quantity at least 0.0015 gram becomes absorbed, which amounts to about three-quarters of the injected dose.

The positive result regarding the influence of the ligature is accordingly reduced to the modest fact that in guinea-pigs, which are less sensitive to the effects of strychnine, a ligature reduces the absorption of the injected dose of strychnine by a small fraction, a reduction sufficient to turn an efficient minimum dose into a subminimum. Is it necessary to assume that this small fraction was *fixed* by the tissues of the leg and by this and this alone was prevented from being absorbed into the circulation? And is such an assumption even probable? A leg which was subjected to a long, firm constriction certainly contains as a result many changes which are capable of affecting its power of absorption, whether this latter be accomplished by physical or cellular forces, and whether it takes place by the blood-vessels or by way of the lymphatics. The constriction causes a destruction or at least an impairment of the vitality of some of the tissues; it causes the occlusion by thrombi of many blood-capillaries, and it probably causes in some of the lymph-spaces a conglutination and in others obstruction by lymph-clots, etc. Under these circumstances, is not a diminution in the absorption in the injected doses to be expected, simply as a consequence of the impaired power of absorption within the tissues of the ligated leg? And now if, in addition to the factor of impaired absorption, the tissue would bind some portion of the injected strychnine, would not the portion of strychnine which is not becoming absorbed be considerably larger than that fraction which we find missing in reality?

We have, however, endeavored to clear up this point by an experimental arrangement. If the supposition is correct that animal tissue can neutralize a certain amount of poison, we might expect that the neutralization will be in direct proportion to the amount of tissue and in inverse proportion to the amount of poison which comes into play. We therefore constricted simultaneously three extremities of a guinea-pig and in each of the extremities injected simultaneously an equal amount of strychnine which we varied in different animals. By this arrangement the strychnine comes in contact with a larger amount of tissue than in the original experiment, and we ought to have found that larger doses of strychnine prove to be ineffective. We obtained, however, just an opposite result. Even when only 0.0005 gram was injected in each extremity, the sum total of which for one animal was just 0.0015 gram, a violent tetanus set in on removal of all the three ligatures. A dose of 0.0015 gram injected in one constricted extremity becomes ineffective, the same dose divided among three extremities, *i. e.*, three times as much tissue, proves to be very effective. The conclusion therefore is unavoidable that the tissue does not interfere with the effect of the strychnine. Apparently the success in our last experiment is due to the fact that the number of unimpaired paths of absorption is greater in the three constricted extremities than in one.

Von Czyhlarz and Donath, however, state that they have performed experiments which demonstrate that the absorption within the ligated leg is not impaired. They have kept a leg constricted for a few hours and shortly before removing the bandage have injected strychnine, the animals, they state briefly, succumbed in a few minutes under characteristic convulsions. Such a general statement proves in a general way that absorption can take place even from a ligated leg. This could be satisfactory to the authors who apparently assumed that when the injection was made just before the constriction none of the strychnine became absorbed, which could then be due only to some other factor than impaired absorption. We have shown that by far the greater part of the injected strychnine becomes absorbed even with a prolonged constriction. To prove that the retained small fraction was not due to some degree of impairment of the absorption power in the constricted leg, it would only be necessary to show that the absorption did not suffer at all, *i. e.*, it would require a comparison of the power of absorption from such a leg with that of a normal non-ligated leg; minimum doses would have to be used and the intensity and duration of the convulsions noted, etc. All this the authors have not done, they do not speak of comparison experiments and do not even tell us what doses they employed in these experiments. We may then safely say that they have not proven and not even attempted to prove that by prolonged constriction the power of absorption does not suffer to any small degree which would suffice to turn the absorption of an effective minimum dose into an ineffective subminimum dose. It would be very strange indeed if a constriction lasting from three to four hours, which often enough causes visible changes in the extremity, would not alter in the least the power of absorption of such a limb.

We have, however, again tested this point by direct experiments with the following results: When a leg was kept constricted for from one

and a half to two hours and immediately on removal of the constriction 0.0015 gram, *i. e.*, an effective minimum dose, of strychnine was injected into it, the effect of the strychnine was visibly modified; the convulsions appeared later than usual, did not last long and were altogether of a mild type, distinctly milder than in the control-animal. The strychnine effect was less marked the more distant from the place of constriction the injection was made, especially when it is made toward the distal end. On the other hand, if the injection was made near the place of constriction and in a centripetal direction the effect was sometimes very little different from that observed in a control-animal.

Our results can be briefly summarized as follows: Constriction of an extremity of an animal, even after removal of the constriction, markedly retards the fatal outcome of snake-poisoning and transforms an effective minimum dose of strychnine into an ineffective subminimum dose. This effect is apparently due to some impairment of the power of absorption within the constricted leg. It seems quite certain that no part of either poison becomes fixed or neutralized by the tissues of the animals experimented upon. The claim of v. Czyhlarz and Donath to that effect could not be sustained.

EYE-WORK IN GENERAL PRACTICE.

By S. W. S. TOMS, M.D.,
OF NYACK, N. Y.;
INSTRUCTOR IN DISEASES OF THE EYE IN THE NEW YORK POST-GRADUATE MEDICAL SCHOOL AND HOSPITAL.

IN the early years of my professional work I met a class of patients presenting conditions of a nervous type of deranged functions difficult to understand and refractory to treatment. The obscurity of the exciting causes made diagnoses speculative because of the variety of symptoms in different individuals. After seeing a large number of such cases I felt there probably was a latent causation common to the entire class.

The symptom-complex comprised anorexia, nausea and sometimes vomiting; an obstinate neuralgia, generally affecting some of the cranial nerves; vertigo or agarophobia, alternating perhaps with an irregular headache; in others gastrointestinal indigestion, sour stomach or gaseous dyspepsia. These anomalous conditions, purely functional, could not be accounted for by organic disease, and rational measures of therapeutics were utterly futile in giving permanent relief. I failed to find any solution for these departures from the normal standards of health in the medical literature I possessed, or in post-graduate study. Most of these cases were not in those of purely neurotic temperament *per se*. Their complaints were of a fixed character rather than changeable, and their physical conditions were often of the best.

In discussing these unsatisfactory cases with a *confrère*, a most thorough-going and indefatigable investigator, he said he believed that such cases belong to a class whose nervous reserves were being continually exhausted, or, as he expressed it, "nervous force going to waste," because of some defect, not in the supply, but in overuse or leakage. He himself was a sufferer from "nervous dyspepsia." He had studied his own case, because well qualified men had failed to relieve him. Every organ had been examined and most of them treated by specialists, not excepting his eyes. While in New York City he spent some time at the library of the Academy of Medicine where he looked into some articles on heterophoria. He visited me and for the first time had an ophthalmic examination made. This examination revealed a muscular defect, the surgical correction of which brought relief. On that occasion I derived a most useful suggestion, from which I have been able to help many of my patients who otherwise would still be sufferers.

In presenting an article on this subject I am conscious of the suspicion that exists in the profession of any departure from the established ideas of the past. Some there are in the profession who are so conservative that they disbelieve anything that they themselves are unable to practice. Others treat such matters with indifference; while still others have deep dyed-in-the-wool prejudices. It is only necessary to listen to discussions of "new treatments" in medical society meetings when electro-therapeutics, or some similar measures are credited with accomplishing new results, to hear most unreasonable criticisms expressed; generally by opponents whose experience has been the most crude or who have had none at all.

The same is true regarding much that can be accomplished by eye treatment for many symptomatic diseases functional from peripheral irritation. The general practitioner cannot be blamed for holding himself aloof and for not accepting these truths when many of the older specialists in ophthalmology claim there is no such thing as "muscular asthenopia" after proper correction of refractive errors. I believe these specialists belong to one of the classes of conservative practitioners I have just mentioned. They refuse to acquire the technic or to use the instruments which are necessary to demonstrate that there is a condition of muscular imbalance which is as fruitful in producing functional reflex disorders as are refractive errors. It is as reasonable to deny the germ theory of disease because of ignorance of bacterial technic. There can be no question that, if an oculist ignores the investigation for, and correction of, muscular asthenopia, he neglects a most important duty he owes his patients and leaves a percentage—quite a proportion—of his cases unrelieved. This was testified to in a recent personal conversation with one of the surgeons of the Post-Graduate Hospital, who by a series of tenotomies obtained great relief.

I have a case in mind that is full of suggestive neglected possibilities. The patient is a man of twenty-four, now confined in one of the colonies

for epileptic insanity. He never had had a convulsion until he was ten years of age—the period of life when active school-work begins and use of the eyes becomes considerable. There was no family history, even of the remotest, of epilepsy. His mother is a sufferer from headaches. The attacks continued despite vigorous medication as long as he attended school. He was taken away from his studies and the convulsions ceased without medicine for three years. An attempt to take up art, after school-work, caused a relapse, the convulsions became more severe; and continued application to his art, combined with heroic drugging, brought on insanity. What better suggestive idea of the factor of eye-strain as the direct excitant of symptomatic epilepsy could be had than the citation of such a case.

The irritation to the brain from the reflex cause, when continued, eventually produced the true disease. The complicating insanity is perhaps the result of the long-continued use of bromides. The epileptic state has been produced by other reflex irritations, *viz.*, adherent prepuce, nasal deformities, etc., as may be found from abundant examples recorded in medical literature.

The factor which so often obscures diagnosis in these eye cases is that they rarely have any symptoms directly referable to the eyes themselves; on the contrary, many of them have better than normal vision. I am often confronted with the statement, "I am sure, doctor, that my headaches do not come from my eyes, as I can read the names of the steamboats on the river." It is these far-sighted eyes (hyperopic) that so frequently have their concomitant symptoms; and, moreover, a considerable proportion of those having a muscular anomaly are perfectly emmetropic or have normal vision. The efforts that the brain centers make in the acts of accommodation and adjustments in producing perfect pictures on the retina and in binocular single vision, more especially in near work, produce eye-strain, and reflex symptoms develop. When we realize the thousands of intricate and complicated adjustments required in the use of the eyes in properly conveying visual perceptions to the brain, can it be wondered at that nervous symptoms develop if those wonderful organs lack mechanical adjustments to work easily? Yet, as I have intimated, very few direct symptoms from defects are experienced in the eyes themselves; hence, the general practitioner frequently overlooks the indirect cause of nervous phenomena.

Direct eye symptoms are no more frequent in reflex functional derangements than is pain the first symptom of cancer. Another very interesting fact exists in this connection. It is not the high degrees of refractive errors that cause the most trouble, but the moderate and frequently the very low degrees that produce reflex symptoms. In the high degrees the blurring of the images on the retina cannot be overcome by any effort the brain may make through the nervous impulses sent to the adjusting and focusing apparatus of the eye. It is too gross for the ciliary muscles to act, and the brain ceases to send impulses, and the visual center accepts the imperfect impression without tiring. The schoolboy with such a state of affairs is a poor writer and speller and may be "a dunce," but his general health does not suffer. The girl with a slight astigmatism or a latent divergent squint (exophoria) will have headaches, get tired easily, is often sick at her stomach and is always "nervous." She has vision as acute as most normal eyes, but it is at an expense of nervous force. It is not the squinting eye that produces nervous troubles; for often the squinting eye is amblyopic, but, on the contrary, the latent not the manifest squint subjects often have nervous manifestations of some form or other.

Some pathological conditions occurring in later life are of interest because they are more than probably due to the anomalies under discussion. Glaucoma is more frequent in astigmatic eyes; and cataractous eyes are frequently abnormal in refractive errors. This is but one of the potent arguments why all eyes should be properly examined in childhood. A child's entire future may be dependent on the neglect of this; his education, his health, and in after life a helpless blindness might be prevented. Schoolteachers and parents often stigmatize a scholar "a dunce" because he cannot acquire knowledge through defective special sense organs. A child is often taken out of school on the advice of the family physician, for the reason that he or she suffers so much from headaches, "nervousness," etc., because there exists some latent eye defect the correction of which would allow the acquirement of an education and preserve a well balanced nervous system.

Although it is not my intention in this paper to cite pathological cases, but to relate those of functional derangement occurring in my practice, I desire to report a suggestive case of functional disorder due to congenital astigmatism. The patient was a woman of middle life infected with lues by her husband. After the primary lesions both eyes were affected by retinochoroiditis and the right with iritis. She never had worn glasses to correct a defect of 3.50 diopters of hyperopic astigmatism, and it seems to me that the normal standard of nutrition manifested in structure resistance was so perverted and lowered that the disease fastened itself in the weakest tissues, which in this case were the eyes.

To illustrate the ideas already set forth some cases are reported which may interest the general practitioner. A few others have been reported in the December (1889) number of *The Post-Graduate*, entitled "Ocular Reflex Neuroses."

Case I.—Hysteria gravior with delusions. H. B., aged twenty-nine years, German, single, housemaid. Father died of apoplexy. Mother alive and well. There is a neuropathic tendency in the family. Patient has had good health ex-

cept for an attack of measles at seven years of age. At that time her eyes were seriously affected; for weeks she was confined to a dark room and it was six months before she regained her sight. Following this the right eye squinted inward. She had diphtheria at eight, but recovered without sequelæ; also, scarlet fever at sixteen. She has always worked hard at housework and in Germany overtaxed her eyes by sewing at night by a poor lamplight. On December 23, 1898, the patient, having been left alone in care of her sister's children, was suddenly taken while at dinner with a sense of choking as if something had lodged in the left side of her throat. I was hastily summoned and instead of finding her coughing, choking and strangling saw a somewhat excited young woman who told me in a deliberate way that she was choking to death; that while eating plain chicken broth she had (as she supposed) accidentally swallowed a piece of meat or bone which had lodged in her throat, not in the larynx, but up behind the palate on the left side. I saw the chicken broth. It was clear and had no particles of meat in it. She described the sensation as something in her throat (pharynx) and radiating upward into her left ear. I could neither see nor feel anything there, yet she was insistant upon my removing the supposed cause of her trouble. Suspecting hysteria I took her to my office, carefully examined her, but, finding nothing abnormal, determined to create a mental impression by hurting her. I told her I had no instrument suitable for removing it and would use my finger to dislodge it and it probably would go down her throat. I produced considerable gagging with my finger in her throat, withdrew it, directing her to swallow quickly; I then made an application of cocaine and waited. She left my office convinced she had been relieved; but to my surprise early next morning she reappeared, stating that she could not swallow and there must be some chicken still remaining. Almost daily, often several times a day, at all hours, day or night, this poor girl came for an examination to be assured the throat was clear. For seven weeks she refused to eat, taking nothing but strained soup and broths and often would choke trying to swallow these. If she knew I was away from home she positively refused all kinds of liquids. She would suddenly grasp her throat, make frantic gasping and choking manifestations, and on two occasions had a clonic convulsion, greatly alarming her friends. She said she could not get her breath and was dying, as her heart beat so rapidly. She lost about twenty pounds in weight and became weak and unable to leave her bed. Repeated physical examinations were absolutely negative. She had two hyperesthetic spots in her throat on the left side below the tonsil. When these were touched it caused a clonic spasm of the muscles of deglutition and those of her larynx. The examination of her nose and ears was negative, as was that of the thorax, abdomen and pelvic organs. She had no areas of cutaneous anesthesia. The routine treatment for hysteria was but partially successful and no moral influence could induce her to eat. On one occasion I took lunch with her, but she could not swallow any solid food. I was at a loss for further resources, but thought an examination of her eyes the next in order, and on March 1, 1899, I carefully went over her refraction and muscular balance. I found she had compound hyperopic astigmatism of different degrees in each eye, and she disclosed homonymous diplopia at once when a red glass was put over either eye. This manifest evidence of a latent convergent squint, requiring a strong prism to unite the images, seemed a paradox when abduction was measured, it being double that of adduction. The external muscles overcame a prism of 30°, while the normal is but 6° to 8°. The internal muscles measured only in R. E., 14°; L. E., 18°—at least 50 per cent. too weak. This state of affairs called for a mydriatic; the effect of this was most surprising, for the same afternoon a desire for food was experienced and she commenced to take solids that day—the sensation in the throat was no longer the controlling and inhibiting influence over her normal appetite. The first day she got her glasses, the third after the mydriatic she partook of solids seven times. Within a week the last vestige of the throat symptom of hysteria had left her, and her return to health was rapid and satisfactory. She has not had any return of her symptoms since.

I performed two tenotomies on her external muscles, reducing the abduction from 30° to 4° without increasing the power of the internal, at the same time reducing an esophoria of 13° to 2° to 5°. This gave her binocular single vision and freedom from all discomfort. Her vision before treatment was: R. E. 20/200 w. + .75 ⌒ +3.25 ax. 90° = 20/50; in L. E., 20/50 w. + .75 ⌒ + 2.75 ax. 90° = 20/30. Before tenotomies on the external recti muscles she had a sensation of constriction over a small area of the scalp and diplopia, both of which were relieved by the operations. She received no medication whatever after her glasses were procured and the only other treatment she had was a few days of static electricity.

Here was a case with excessive abduction yet having a high degree of esophoria and homonymous diplopia—these last two conditions opposed to excessive abduction. The indication for interference, however, was plain to me despite the apparent esophoria and homonymous diplopia and the tenotomies on both externi reduced the three abnormal conditions and nearly balanced the eyes.

Case II.—Reflex epilepsy depending on a very slight refractive error, the relief with cylinder and spherical glasses, preventing unequal contraction of the ciliary muscles, being sufficient to prevent attacks. A. H. S., aged thirteen years. Neurotic, rheumatic and tuberculous family his-

tory. Had first attack at ten. Frequency, every four or five months. *Petit mal* diurnal. He was treated for dyspepsia with negative results. Patient was referred by his family physician to Dr. Francis Valk of New York, who prescribed glasses and found a slight insufficiency of right internus. He wore glasses constantly and had no further attacks. He lost his spectacles and went without them, and in a few months the attacks recurred. He was subsequently referred to me. I found his vision to be: R. E., 20/20; L. E., 20/20 +; would not accept any glass. Under mydriatic R. E. 20/20 + .50 cyl. ax. 90° = 20/15. L. E., 20/70 + 50 D ⌒ + .50 ax. 90° = 20/15; muscular balance good. These full correction glasses were given. He has had but one attack since, occurring one day while not wearing his glasses. The muscular trouble does not seem to be a factor, as it is but slight, and since his refractive errors are corrected it has played no part in his attacks. It is now over a year since he was fitted and I have recently seen him.

This case is an example of a very slight refractive error, yet the result of correction clearly proved the importance of its recognition under full mydriasis and correction on unequal refraction.

Case III.—Periodical migraine depending upon uncorrected refractive errors of vision. Wm. A., aged twenty-six years; married, American, carpenter; negative family history. Patient gives a history of "sick headaches" since he was a school-boy, occurring every six weeks when he was working. These attacks are accompanied by vomiting, prostration, and at times fainting attacks, facial pallor, small thready pulse of high tension and frequency, lasting from one to three days. The headache is general, of the angiospastic type, numbness of the extremities, "fortification spectrum," etc. This patient had no alcoholic or tobacco habits, has led a regular life, has no specific history, no malaria or rheumatic symptoms; urine negative; bowels somewhat irregular. Patient's general health was good in every way except the migraine. Physical examination negative. V. in O. D. 20/30; V. in O. S. 20/40. Under a mydriatic O. D. 20/50; w. + .67 D. ⌒ + .67 cyl. ax. 90° = 20/20 O. S. 20/50; w. + .67 D. ⌒ + .67 cyl. ax. 90° = 20/20. This full correction was given for constant wear. He went eight months without an attack, and this was undoubtedly caused by having his spectacle frame bent—changing the axis of his lenses. This was straightened and he had no further trouble until he broke his frame, when another attack occurred.

Case IV.—Intense morning headaches due to far-sightedness (hypermetropia), accommodative asthenopia for near work. Harold H., aged twelve years; school-boy, American. Both father and mother far-sighted. Patient was a devoted student, ambitious to progress in his school work. I attended him for some months for headaches that would awaken him during the early morning hours, causing such intense pain that he would cry for hours. This condition persisted in spite of medication, regulation of diet and correcting a constipated tendency, until it was about decided on by his parents to take him out of school, although his physical condition was vigorous and his health otherwise uniformly good. Before taking this step the eyes were examined; V. in O. D. = 20/30 w. + 1.25 = 20/15; V. in O. S. = 20/20 w. + 1.50 = 20/20. Under a mydriatic 20/70 in each eye w. + 1.75 D. = 20/20. The correction given being +1.50 D. for use in near work which completely relieved him. He improved so rapidly that he gained ten pounds in weight within six months, and school-work was extremely easy for him subsequently. I have seen him within a week. He is about to graduate. It is now three years since this examination was made and he informs me he had never been troubled since with his former affliction. He uses his spectacles for studying only.

Case V.—C. M. D., aged thirty-six years, American housewife, married. Has neuropathic antecedents. Patient was referred to me by her family physician in April, 1899, for an examination of her eyes. She was a well-nourished woman with a good personal history. She was given to emotional states. The summer previous she became interested in spiritualism and concluded with an attack of grave hysteria, amounting to actual mania for several days and requiring restraint and the administration of the most powerful sedatives. She was sent to the mountains soon after to recuperate, but owing to a cardiac lesion was in no wise improved and returned in an exhausted state in which she remained, a semi-invalid, for months. She formerly had some pelvic disease, laceration of the cervix and perineum; the cervix was repaired, but the relaxation of the pelvic floor still causes a retroversion and chronic constipation. This latter condition has been fairly well taken care of by a well adjusted pessary. She complained of pains in her temples and eyes, with fatigue on using them, congestive occipital headaches and uncontrollable nervous spells. V. in O. D. 20/70 w. + .62 ⌒ + 1.00 ax. 75° = 20/20; V. in O. S. 20/30 w. + .62 ⌒ + 1.00 ax. 110° = 20/20; under a mydriatic O. D. 20/100 w. + 2.25 ⌒ + 1.00 ax. 75° = 20/20; O. S. 20/100 w. + 2.00 ⌒ + 1.00 ax. 110° = 20/20. After mydriatic had passed off she accepted O. D. + .75 ⌒ + 1.00 ax. 75°; O. S. + .75 ⌒ + 1.00 ax. 110°, and these were given for constant wear. She had a slight (¼°) R. hyperphoria and 4° esophoria in distance with 7° in accommodation. Prismatic exercises soon overcame this manifest, and together with her glasses she has almost perfect freedom from all her old nervous complaints. She has not had any headaches or fainting attacks since wearing her glasses. Her physical condition is much improved in lessened muscular relaxation; better color, heart's action and general health.

Case VI.—Neurasthenia with hysterical attacks in a male, depending upon errors of refraction superinduced by nervous shocks and excitement. F. H. H., aged twenty-six years, Austrian, single, electrician. Family history good. Personal history negative as to specific diseases. Has had robust health. Had malaria and brain fever in South Africa. Has led a life of excitement, following the occupation of electrician for different theatrical troupes in different parts of the world. Wished to enlist in the United States Army at the outbreak of Spanish war. Was examined and refused, but determined to enter and afterward succeeded in getting into United States artillery. In May, 1898, he received a severe fright from a flash of light in short circuiting a 110-volt current in a large Newark establishment. This produced a temporary blindness for three hours with profuse lacrimation. He was very much frightened. This, together with the disappointment of not getting into the army, determined him to go home to Carlsbad, where he arrived early in May. His father put him in the care of an eye specialist who prescribed glasses for him. He had some trouble from the glare of sunlight on the water while crossing the ocean, which was the first difficulty he had ever experienced with his eyes. He wore the glasses for a time, his eyes feeling better. He returned in June and entered the artillery service of the Government. In August he had trouble again with his eyes at target practice. While shooting the target would vanish, the white and black became mixed, which made him nervous. A few days after he became much agitated while standing in line with the artillery facing the sun and a reflected glare from the water. The moving of the rifles in practice exercises in this glare and sunlight brought on an uncontrollable nervous attack with pain in the base of the brain, blepharospasm, headache, nausea and "spectra" before his eyes. He was taken to the infirmary, being unable to perform his duties. Owing to no outward evidence of any inflammation of the eyes, his companions jeered him almost into a frenzy. The post surgeon, not being an oculist and always suspicious of malingering in the men, not finding any physical evidence of his nervousness, the ocular condition remained unrecognized. He became thoroughly incapacitated for duty and instead of going to the front was sent to one of the convalescent homes for sick soldiers instituted by that good and generous woman, Miss Helen Gould. He was treated there for neurasthenia with drugs only, and seen by an oculist who diagnosed hyperemia of the retinæ. A transference to another home brought him under my observation. I thoroughly examined him and finding no physical cause for his neurasthenia, he being in perfect physical health, I was attracted to his eyes by the fact that he choose dark corners of the sitting-room, avoided the lamplight and pulled his cap well down over his forehead when out-of-doors. Upon questioning him, I elicited from him this interesting history. I had him visit my office where I thoroughly examined his eyes. V. in O. D. 20/100 w. + 1.25 D. = 20/40; V. in O. S. 20/50; accepted no glass. Under a mydriatic: V. in O. D. 20/200 w. + 2.25 D. ⌒ + 2.25 ax. 80° = 20/40; V. in O. S. 20/100 w. + .75 D. ⌒ + 2.25 ax. 65° = 20/30. Javal's ophthalmometer: R. E. $\frac{32.00 @ 80°}{34.50 @ 1.0°}$; L. E. same Retinoscopic examination confirmed this approximately. Ophthalmoscope showed cornea, lenses, and vitreous normal; retinæ hyperemic; nerves normal but hypersensative to light. With the correction, after mydriatic has passed off, he showed ¾° L. hyperphoria; 2° of exophoria in distance with 5° in accommodation. Muscles showed R. E. 30 × 6 × 1 : L. E. 30 × 6 × 2. No diplopia with red glass, and normal convergence. Treatment by full correction of the astigmatism and part of the hypermetropia. He remained under my care for a few weeks and improvement was rapid. His sleep returned within a week. The pain at the occiput disappeared at once. By Christmas he was entirely well.

In conclusion, it is apparent from my personal experience that there are many cases presenting nondescript ailments, due to some latent irritation to susceptible nervous centers, capable of reflecting impressions to organs easily deranged, that are indirectly dependent upon abnormal conditions of congenital eye defects in refraction and muscular imbalance. It is not supposed that most general practitioners can become experts in the detection of the obscure etiology of these conditions, yet it is a matter for consideration and to be thought of most frequently instead of passively or openly ignoring the work done in this field, which is beginning to be entered by investigators conscientious in their endeavors to seek the truth. It is a favorable sign of progress that those who but a few years ago looked upon the subject as a fad are not opposing it openly to-day. I have seen many patients who had suffered for years relieved in a few weeks' of treatment—some in a few days. There is no reason why people so afflicted should go on to acquire a chronic habit of nerve derangement, or a fixed and intractible nervous disease, if the primary and exciting cause can be discovered and is amenable to treatment; and it is for this plea that this article is submitted for thought and reflection to those who so frequently meet these cases, *i. e.*, the general practitioners.

The following case is of interest in illustrating what may be accomplished in restoring some measure of function to a useless eye and correcting a deformity:

Miss J. M., aged twenty years. History of eye trouble on maternal side; near-sighted astigmatism in right eye and far-sighted astigmatism in the left eye, both compound, complicated by a divergent squint in right eye and a resultant amblyopia exanopsia. V. in O. D. 3/200 w—1.25 D. ⌒ — 2.75 cyl. ax. 180° = 20/200; V. in O. S.

20/40 w. + 1.50 D. ⊃ + .50 cyl. ax. 90° = 20/20; Javal's ophthalmometer = R. E. $\frac{38.75 @ 90°}{35.50 @ 180°}$; L. E. $\frac{34.00 @ 90°}{35.00 @ 180°}$. Retinoscopy and the ophthalmoscope confirmed these findings. Binocular single vision was possible only with a 20° prism base in over the right eye and 7° pr. B. down over the left eye. She fixed entirely with the left eye. Spectacles were given for constant wear correcting fully her refraction, and a grab front worn over these with prisms partly correcting the muscular defects. Supplementing this she was directed to wear a blinder over the good left eye for one or two hours twice a day and go about as usual to stimulate the function of vision in the amblyopic right eye. With these corrections and exercises she soon learned to use this eye to a considerable extent. Weekly the prisms were increased until she was wearing 8° B. in over right eye and 4° B. down over left eye. A continuation of this treatment for four months showed a decided improvement in vision in distance in readily and quickly recognizing the 20/200 letters or the second image of the candle; while at reading distance at first only certain letters in No. 14 Jager types were seen whereas at this time she read sentences in No. 11. I then made a complete tenotomy of the right externus, correcting the manifest squint, and six weeks later a partial tenotomy of the superior rectus of the left eye for the hypertropia, getting rid of this latter condition and reducing the exotropia more than one-half. A subsequent advancement of the right internal rectus is under advisement. The improvement in the appearance of the patient from a cosmetic point of view is most marked and satisfactory. From a tilting sidewise of the head and an eye mostly in the outer canthus, she now carries her head straight and has two parallel eyes. The aim in this case in undertaking treatment had been, first, to restore the function of vision in a blind eye and to make it to some extent useful in case the sound eye met with an accident, and, secondly, to correct an existing deformity in the divergent strabismus. Improvement is continuing in the betterment of visual acuity and it is reasonable to hope for still more.[1]

PRESENT STATUS OF INTERSTATE RECIPROCITY CONCERNING LICENSES TO PRACTISE MEDICINE.

BY EMIL AMBERG, M.D.,
OF DETROIT, MICHIGAN.

(Continued from page 659.)

18. *Kansas.*

Answer to Question 5. Yes.
Answer to Question 6. We would.
Answer to Question 7. A congress composed of representatives of all the State Boards of Health in the United States might possibly be able to formulate some plan of action.

A better way, perhaps, would be to appoint a committee and authorize it to select the best parts of the several laws of the different states, and, from these selection compile a law, submit it to the Boards of Health in the United States for approval. (Signed) W. B. SWAN.

19. *Kentucky.*

No one can begin to practise who has not graduated from a recognized college requiring attendance upon four courses of lectures and meeting the other requirements of the American Medical College Association. Until there is a far more rigid enforcement of similar laws in other states of the Union it is not the intention of this Board to take any steps looking to interstate reciprocity.

(Signed) J. N. MCCORMACK.

20. *Louisiana.*

The Board, individually, is in favor of entering into an agreement which will recognize certificates from other Boards requiring the same standard as the Louisiana Board, but the Louisiana law requires all applicants to stand a written examination, and I do not see just now how this can be overcome. However, I will present the matter to the regular meeting of the State Society with the view of overcoming all obstacles.

(Signed) H. S. COCRAM.

21. *Maine.*

Representatives from all the Boards in New England met at Boston February 1, 1900, and after a discussion it was the unanimous opinion that radical changes in the laws are necessary to enable even the New England States to reciprocate in examination and registration. The desirability of this was conceded by all, etc.

(Signed) A. K. P. MESERVE.

22. *Maryland.*

Replying to your request of recent date, I beg to say that it is not our purpose to do anything at all with "Interstate Reciprocity for the License to Practise Medicine." Attempts to secure desirable modifications in the law came near destroying all law on the subject. We regard the present control of the stranger who desires to come into our gates as very satisfactory, and venture to commend it to others who really desire something good.

(Signed) J. MCP. SCOTT.

23. *Massachusetts.*

(See Maine.)

24. *Michigan.*

Part of Law: "The applicant shall be registered and given a certificate of registration if he shall present a certified copy or certificate of registration or license which has been issued to said applicant in another state of the Union where the requirements for registration shall be deemed

[1] A shortening of the right internus and a second complete tenotomy of the externus have resulted in perfect orthophoria, abolishing completely the diplopia and correcting the divergent squint.

by said Board to be equivalent of those of this Act. Provided such state shall accord a like privilege to holders of certificates from this Board. The fee for registration from applicants of this class shall be ten dollars."

25. *Minnesota.*

The physicians of this state are, I believe, beginning to see that reciprocity is desirable in the way of medical certificates. As secretary of this Board I shall ask that some provision be made in our next medical bill, which we propose to introduce at the next session of our legislature, in January, 1901.

(Signed) JOHN B. BRIMHALL.

26. *Mississippi.*

Answer to Question 5. I would consider such a proposition.

Answer to Question 6. I will bring the matter before my Board at its next meeting, and, if so instructed by it, will gladly cooperate with you. (Signed) J. F. HUNTER.

27. *Missouri.*

Answer to Questions 5 and 6. Yes.

Answer to Question 7. We believe that this is the only way to really succeed in advancing and maintaining the same, in both medical education and legislation, and we offer our hearty cooperation in an effort of this kind.

(Signed) E. L. STANDLEE.

28. *Montana.*

The Medical Practice Act of Montana provides that all applicants shall pass the Board of Medical Examiners' examination. Nothing has been done by us looking toward reciprocity, and no particular intention is evident.

(Signed) WM. C. RIDDELL.

29. *Nebraska.*

Answer to Questions 5 and 6. Yes; but few states have as good a law as Nebraska.

Answer to Question 7. In my opinion our only hope is government recognition and control over medical education. Anything else is probably hopeless so far as securing a uniformly high standard is concerned. What could be done with Missouri, and many other Southern states?

(Signed) B. F. CRUMMER.

30. *Nevada.*

Answers to Questions 5 and 6. Yes.

(Signed) S. C. GIBSON.

31. *New Hampshire.*

(See Maine.)

Part of law: "Applicants examined and licensed by other State Examining Boards registered by the regent as maintaining standards not lower than those provided by this chapter, etc., etc., may, without further examination, on payment of five dollars to the regent and on submitting such evidence as may be required, receive an endorsement of their licenses or diplomas, conferring all rights and privileges of a regents' license issued after examination.

32. *New Jersey.*

Part of Law: "Certificates of examination and license issued by the Board of Regents of New York, and by the Medical Councils of Pennsylvania and Delaware, based upon examination by the respective Examining Boards of those States, may be endorsed at any time by this Board. Blanks for this purpose must be obtained from the Secretary, and, when properly filled out and returned for filing, must be accompanied by a certified check, or postal money order, for the regular fee of fifty dollars."

33. *New Mexico.*

Answer to Question 5. Yes, if we did not have to recognize a lot of newspaper advertisers who hold licenses in other states.

Answer to Question 6. Yes.

(Signed) T. P. MARTIN.

34. *New York.*

Part of law: "Applicants examined and licensed by other State Boards registered by the regents as maintaining a standard not lower than those provided by this article . . . may, without further examination, on payment of ten dollars to the regents . . . receive from them an endorsement of their license."

The attorney-general, the legal adviser to all the state departments, has decided that no discrimination should be made in the interpretation of this law whereby the licenses issued by other states could be endorsed unless the state itself observed a standard (both of its academic and in its examinations and tests) which was equal to that maintained by the officials having charge of such examinations in the State of New York. Because of that decision the State Board of Medical Examiners has up to this time been unable to recommend the indorsement of licenses conferred by other states, and, inasmuch as the law has also been held to apply to states of the United States only, the indorsement of licenses issued by foreign countries has also been impossible. The State Board of Medical Examiners is on record as being in favor of reciprocal action in connection with the indorsement of licenses as soon as the law can be so formulated as to make such a procedure possible without any discrimination against the interests of those who are educated and licensed to practise medicine within the borders of this state.

(Signed) M. J. LEWI.

35. *North Carolina.*

You will note that a license from another state only entitles to examination, just as a diploma from a college in good standing does.

We considered the reciprocity idea, but our standard is so much higher than it is in most of the states that, for the present at any rate, we

are afraid of it. We can see no objection to requiring a physician who wishes to practise in our state, coming from another state, to submit to the same conditions that we demand of our own people. I do not wish to throw cold water upon your work, but I do not think you can count on North Carolina for a good many years to come.
(Signed) CHAIRMAN COM. ON LEGISLATION.

36. *North Dakota.*

I would say that all the members of our Board are in hearty accord with the reciprocity movement, and that when the measure becomes generally adopted we will be found in line. We expect to prepare for it by having the necessary amendment to our law passed at the coming session. (Signed) H. W. WHEELER.

37. *Ohio.*

Part of Law: "Provided further, that the Board may, at its discretion, dispense with an examination in the case of a physician or surgeon duly authorized to practise medicine or surgery in any other state, territory, or the District of Columbia, who may desire to change his residence to Ohio and who makes application on a form to be prescribed by the board, accompanied by a fee of fifty dollars, and presents a certificate or license issued after an examination by the medical board of such state, territory or the District of Columbia, accorded only to applicants of states, territories or districts whose laws demand qualifications of equal grade with those required in Ohio; but such examination shall not be dispensed with unless under the law and regulations of the state, territory or District of Columbia, equal rights and privileges are accorded to physicians and surgeons of Ohio holding the certificate of the board, who may desire to remove to, and practise in such state, territory, or the District of Columbia."

38. *Oklahoma.*

I believe it would be possible to enact a law in this territory imposing interstate reciprocity. The same would be agreeable to the medical profession. If this is ever achieved Oklahoma Territory would be one of the first political divisions to fall into line with the improved era of medical legislation. (Signed) L. HAYNES BUXTON.

39. *Oregon.*

As previously stated to you, this Board, under its present law (a copy of which I inclose) can do nothing in this matter. However, the Board is favorable toward such a law.
(Signed) BYRON E. MILLER.

40. *Pennsylvania.*

The Medical Council of Pennsylvania recognizes licenses issued by the State of New York and the State of New Jersey.
(Signed) NATHAN C. SCHAEFFER.

41. *Rhode Island.*
(See Maine.)

42. *South Carolina.*

Our Board is with you in our wish to enter into reciprocity with other State Boards. . . . We were afraid to inject new matter into the discussion at this time, but will work for the reciprocity feature when expedient.
(Signed) S. C. BAKER.

43. *South Dakota.*

So far as I am able to state nothing has been done officially in regard to professional reciprocity, but I have heard the opinion of prominent medical men in our state to the effect that they were in favor of this movement and would cooperate with any and all influences to bring it to a satisfactory accomplishment.
(Signed) A. E. MCCLOUGH.

44. *Tennessee.*

Our law has been so emasculated and altered that we are almost discouraged, and, unless the next legislature improves it, the Board will resign. This being the case, nothing has been done in regard to "Interstate Reciprocity." We could not ask any state to accept our certificates. They are only certificates of holding a diploma from some Tennessee college. The law now requires an examination of only those who have been so unfortunate (?) as to not have graduated in a Tennessee college, or a non-graduate.
(Signed) T. J. HAPPEL.

45. *Texas.*

I am sorry to say that the state of Texas has no State Board of Medical Examiners; we have so-called district boards, but under existing statutes their organizations and operations are farcical, as they often license men without diplomas, and commit so many irregularities that we would be better off without them. The State Association has labored so far without success to obtain the enactment of an adequate law. We expect, however, to continue our efforts.
(Signed) H. A. WEST.

46. *Utah.*

The law of our state must be amended to allow interstate reciprocity, which, no doubt, will be done in the near future.
(Signed) J. F. WHITE.

47. *Vermont.*

All the medical examiners of the New England States are to hold a meeting semi-annually with the idea of uniformity in examinations and interstate reciprocity. See Maine.
(Signed) H. C. TINKHAM.

48. *Virginia.*

Just what action the Board will take in regard to accepting other state certificates I am unable to say until after our June meeting, but suppose we will exchange certificates with all other boards having the same requirements as ours. I am strongly in favor of interchange of certificates among the states, and shall use all my in-

fluence to obtain this very desirable result with those states who wish to exchange and whose requirements are in every way equal to ours.

(Signed) R. S. MARTIN.

49. *Washington.*

Answer to Question 5. No. It might tend to establish a "Medical Colony" in South Dakota, to the detriment of the already established "Divorce Colony," which should stand alone as a monument to the ambition of a growing state.

Answer to Question 6. Yes.

Answer to Question 7. Will submit the matter to the Board at next session.

(Signed) W. G. TUCKER.

Note.—This answer has been classified as unfavorable, in the third committee report.

50. *West Virginia.*

Answers to Questions 5 and 6. A few years ago we made an effort of this character to the states contiguous to this, and they declined, since which we've rested. Our legislature, having made an effort to this end several years ago and having been snubbed by contiguous legislatures (save Maryland), would feel disposed to wait further action on their part.

Answer to Question 7. After some action of legislatures of adjoining states in the matter, our Board would be ready to act, and might have something to suggest. Not till then.

(Signed) A. N. BARBEE.

51. *Wisconsin.*

Part of medical law, 1898: "Any practitioner of medicine holding a certificate from any other State Board imposing requirements equal to those established by the Board provided for herein may, on presentation of the same with a diploma, be admitted to practice in this state without an examination, at the discretion of the Board, on payment of the fee."

The project of a National and State League of State Licentiates with reciprocal arrangements with states of equal standards has been frequently considered by the Board. A strong effort will be made at the meeting of the next legislature to advance our standard to a state examination of all graduates.

(Signed) H. M. LUDWIG.

52. *Wyoming.*

We, as a Board, have made it a rule to issue no license to practitioners, except in compliance with the requirements of our own laws.

Owing to the fact that some states which have good medical laws seem to have Boards that are very lax in enforcing their requirements, we have deemed this course not only advisable, but absolutely necessary in regulating this matter in our own state. So long as the authority to grant a license is vested in the members of the Board to the degree as it is in many of the states, we do not feel that we can consistently enter into any interstate reciprocity, even if we had the legal power to do so. This board has just received a personal recommendation from the president of the ——— State Board of Medical Examiners, in behalf of a man whose sole claims for recognition was a diploma issued by one of the most disreputable "mills" in the country. So long as State Boards are so utterly indifferent in performing their duties as the one above mentioned (the applicant is a registered practitioner in ———) we are distinctly opposed to reciprocity with such people. It is needless to say that the applicant was refused a certificate. (Signed) GEO P. JOHNSON.

These answers speak for themselves. There is not a single political division, I think, which does not express the desire for an improvement, be it in its own jurisdiction or in that of another part of the Union.

The medical profession, and the people, are under great obligations to all these writers, also to all members of the profession and to all others who work for a betterment of the conditions under consideration.

I, for my part, take occasion in this place to express hearty thanks to all who facilitated our work.

As to the future steps to be taken, permit me to offer the following suggestions:

It is advisable that all local medical societies in the United States appoint committees to study the question. The various state and territorial medical societies should appoint a central committee which should be in touch with the committees of the local societies and also with a committee to be appointed by the American Medical Association or by the Section on State Medicine. The latter committee should be in constant touch with a committee of the National Confederation of the State Medical Examining and Licensing Boards.

Besides the advantages of having committees which could work continuously one with another, the committees at the same time could spread information. They thus would be educational factors of no little importance. Meanwhile, the various societies in the United States should have the reciprocity clause added to their medical laws.

It also would be advisable, as I pointed out a few days ago, that the certificates of medically stronger states and territories be accepted by the weaker states or territories, without the stronger division accepting the certificates of the weaker division. This point has also been brought forward by the secretary of the American Academy of Medicine, Dr. McIntire. I defended the idea quite a while ago in Michigan. My suggestion was not accepted, however, for reasons which, I think, are of local interest, although it was in my opinion an injustice to enact the law as it stands now. A well-known United States official, in a communication to me, calls the clause in the Michigan law an exceedingly unfortunate one. We see that New Jersey and Pennsylvania set us a good example in this respect.

The various political divisions will, we are

sure, encourage the movement, and lend a helping hand to establish a condition of affairs worthy of the present age. The best qualified physicians should be available to all, and the medical profession will not cease in their efforts until the point is reached when the title "doctor of medicine" in any place in the United States gives the guarantee that the bearer complied with those requirements which the present state of medical science demands.

If we view interstate reciprocity for the license to practise medicine from our standpoint as physicians, as citizens, and as men, we must admit that a more timely and more humane proposition has never been before the medical profession or before the people of the United States.[1]

MEDICAL PROGRESS.

Thiocol in Tuberculosis.—J. Braun (*Klin. therap. Woch.*, Sept. 23, 1900) has found that most of his patients rebel against the disagreeable taste of creosote and guaiacol and therefore recommends thiocol, which, while it possesses an equal efficiency, is more pleasant to take, since it possesses only a slight salty and bitter taste which does not persist. It is indicated especially in advanced cases with good pulse and may be given in several doses of one-half to one gram daily with none but encouraging results.

The Treatment of Scabies.—Of the many agents recommended in the treatment of this distressing condition the most widely used and generally approved are probably balsam of Peru, styrax, betanaphtol, tar, petroleum, and sulphur. Good results are to be attained by the use of each one of these, but each one also has its distinct contraindications in its compromising odor, property of staining the linen or irritative action on the skin or on the internal organs after absorption. By a careful series of comparative observations made by immersing acari from infected patients in various parasiticide preparations Richard Sachs (*Deutsche med. Woch.*, Sept. 27, 1900) determined that the greatest efficiency is manifested by styrax, betanaphtol and a new synthetic product to which the name of peruscabin has been given. In composition this represents the active constituents of balsam of Peru, being a mixture of cinnamein, styracin and cinnamic acid; it is odorless, non-staining and non-irritating to the skin or internals organs. It is best applied diluted with three parts of castor oil and should be rubbed over the entire surface three times in thirty-six hours. At the end of this time the underwear and linen are changed and three or four days later a full bath is taken. Thirty-five cases were successfully treated in this way, the cure being absolute and no irritative or other untoward effects being produced even in patients already suffering from eczema, dermatitis, etc. The remedy is especially to be recommended for use in children, in debilitated patients and in those having other complicating skin diseases.

Digitalis, Strophanthus and Diuretin.—The best authorities differ widely in their opinions relative to the comparative action of these drugs as diuretics in health and in disease. J. A. MacCaren (*Med. Chron.*, Sept., 1900) has conducted a series of experiments upon himself and has also accumulated some valuable clinical data from hospital patients. During a period of twelve days he took on the fifth, sixth, seventh and eighth days an average of a dram and a half of tincture of digitalis each day. On the seventh day toxic symptoms appeared and diuresis set in. There was an increase in the amount of urine passed from 40 to 47 ounces per day, and an increase in the excretion of urea from 507 to 521 grains. No diuretic effect was obtained from the infusion, but no toxic symptoms appeared. No diuresis was obtained from the use of eighty-five minims of tincture of strophanthus taken during four days, or from two hundred and seventy grains of diuretin taken during three days, although marked toxic symptoms appeared in both instances. In disease "spontaneous diuresis" is believed to be responsible for many of the good effects attributed to drugs. Rest in bed and a regular diet will alone cause diuresis in sixty per cent. of cases in from two to five days. The urea excretion is similarly increased. In 26 cardiac cases treated by digitalis an increase in excretion of solids and fluids took place in 22 cases, and the best results were obtained from the tincture, ♏ xv every four hours, or from Nativelle's granules, one three times per day. Out of 13 cases in which strophanthus was used 8 showed diuretic effects, though not so marked as from digitalis and much more disagreeable gastro-intestinal symptoms followed. Diuretin increased the urine in 6 out of 12 cases, its advantage being the rapidity of its action, but its toxic symptoms were more marked than digitalis and its effect less prolonged. In Bright's disease, however, it acts more favorably than digitalis or strophanthus. In cardiac dropsy digitalis is the drug *par excellence*, being more powerful, less toxic and more certain than the other drugs.

Faucial Inflammation Resembling Diphtheria.—A faucial condition very similar to that due to the Klebs-Löffler bacillus is sometimes observed in patients who do not present the clinical symptoms of diphtheria and do not respond to the treatment of that disease. F. Nilly (*Med. Chron.*, Sept., 1900) reviews four cases and points out the features which distinguish them from diphtheria. (1) The local lesion is more gangrenous in nature, and the ulceration exposed by the separation of the slough is more constant and extensive. (2) The disease is of a more febrile nature and delirium is not uncommon.

[1] Read before the Section on State Medicine of the American Medical Association.

(3) Paralyses do not occur. (4) Recovery, when it occurs, is more rapid and the heart is less affected. (5) The Klebs-Löffler bacillus is present only in small numbers, if at all. (6) Streptococcus pyogenes is the preponderating organism. (7) The diphtheritic antitoxin does not affect the disease. The local appearance is not so characteristic as to be diagnostic. The temperature range, however, is somewhat significant. The author states that a case of apparently membranous faucial inflammation exhibiting a temperature of 103° F. for two consecutive days is probably not one of true diphtheria. This condition, however, is liable to run a constantly high temperature for several days. Signs of cardiac weakness, so common during the prolonged convalescence from diphtheria, are not present in this pseudo-form. So far as the bacteriology of these cases is concerned it is impossible to draw any conclusions from so little material. Several examinations failed to demonstrate the presence of the bacillus diphtheriæ in two of the cases and they were found in very small numbers in two others. The streptococci pyogenes were present, however, in large numbers, but on account of their omnipresence no conclusions can be drawn.

Obstruction of Common Bile-Duct.—The symptoms vary, says J. B. Deaver (*Phila. Med. Jour.*, Oct. 6, 1900), according to the character and cause of the obstruction of the duct. Acute obstruction gives sudden onset of colic, nausea or vomiting or both, pain, tenderness and in some instances collapse and jaundice. Colic in this obstruction is due entirely to the effort of the duct to expel the foreign body and is analogous to the colic of appendicitis. When the stone is situate near the duodenal end of the duct, the cramps may be continuous and cease only when the calculus either drops into the gut or returns into the duct, after the manner of a ball in a ball valve. Coincident with the seizure of colic is pain in the region of the liver often referred to the epigastrium, the umbilicus, the right shoulder and the right chest-wall. A normal at the midpoint of a line joining the umbilicus and the tip of the ninth rib will correspond quite well to the course of the common duct and over this should lie most of the pain and the tenderness. This tenderness is always very pronounced, even upon very gentle palpation and the presence of cholecystitis accentuates it to a large degree. Rigidity of the right rectus muscle is also a very early sign obtainable by the slightest touch of the finger-tips. Such delicate examinations reveal more than almost any other one means. Marked fixation of the flat muscles in the upper right quadrant of the abdomen is more commonly a later development in the disease. Nausea and vomiting are purely reflex. The temperature is also an important symptom. In an acute case a rise shows the advent of inflammation. In a chronic case the intermittent form usually indicates gallstones. Collapse may be either only a reflex or may forerun rupture of the duct. Jaundice is not a constant symptom in the acute cases, although the obstruction may be complete, as in acute edema of the mucosa and arrest of a calculus. But permanent closure of the bile-passages always has jaundice and in the case of cancer is always progressive. A differential diagnosis of the cause of the obstruction should always be tried. The chief points therein are: Previous attacks of bilious colic associated with pain and tenderness in the region of the liver, with or without jaundice; vomiting and its coincidence with or priority to the colic; attacks of jaundice following each attack and present soon after the pain; recurrent attacks of colic with jaundice and an irregular fever. To distinguish between stenosis and other non-malignant causes of obstruction, without exploratory laparotomy, would be an impossibility. The most common cause of malignant stenosis is cancer of the head of the pancreas. This neoplasm gives progressive loss of flesh and strength, digestive disturbances, absence of characteristic colic, pain, no temperature elevation and sooner or later a palpable tumor in the epigastrium. The treatment is medical and then either preventive or expectant or surgical and then either palliative or curative.

Suprarenal Extract and the Heart.—Much has been written about the so-called constitutional effects from the internal use of the suprarenal extract, but very little reliable clinical data have yet been furnished. S. Floersheim (*N. Y. Med. Jour.*, Oct. 6, 1900) has experimented with several normal and abnormal cardiac cases with the idea of determining what effect, if any, the drug has upon this important organ. When the powdered suprarenal is placed on the tongue, mixed with the saliva and chewed thoroughly, he has found it to show its effects within ten seconds; at other times it has required ten minutes. He has not seen a case with a weak irregular pulse in which the effects were not manifest within ten minutes. Although the action of the drug is very rapid, its effects have passed off as rapidly, and the changes in the heart's action never seem to be at all permanent. Upon the normal heart no influence has been detected after the administration of this drug, and the normal pulse in cases of organic disease is likewise unaffected. Dr. Bates believes it to be the most powerful known stimulant of the heart, but admits that its action is only temporary.

Etiology of Gall-Stones.—F. C. Shattuck (*Phila. Med. Jour.*, Oct. 6, 1900) enumerates the well-known causes of biliary calculi as: (1) Cholesterin, bilirubin calcium precipitated by changed reaction, bacteria of various types, foreign bodies. Frerichs and Naunyn give stasis, catarrh and changed reaction as the three chief causes. (2) Age, very uncommon in childhood, rare under thirty, somewhat common between thirty and sixty, very usual after sixty years. (3) Females suffer from them in the ratio of

four to two. (4) Anything predisposing to stasis; here are felt the influence of age with its less active or slightly pathological metabolism, of sex with the sedentary life of woman, of enforced quiet in heart-disease, of confinement among the insane, of altered anatomical relations in floating kidney, gastroptosis, pregnancy and lacing. (5) Bacteria are very important. Modern methods show (*a*) sterile foreign bodies do not cause gall-stones, though a sterile gall-stone may be penetrated at least by the colon bacillus; (*b*) the contents of the hepatic and cystic ducts are usually sterile; (*c*) those of the common duct are usually infectious directly from the duodenum; (*d*) gall-stones have been experimentally produced; failures have followed the use of virulent cultures, while attenuated cultures with or without foreign bodies have succeeded; (*e*) bacteria are found in a very considerable number of gall-stones; (*f*) the clumping peculiarity of the typhoid bacillus seems to be a very active factor and has succeeded experimentally; (*g*) the bacillus coli communis and bacillus typhosus are the most potent generators of biliary calculi.

Drainage of the Biliary Passages.—The indications are alike for operative interference and for drainage is the opinion of J. E. Summers, Jr. (*Phila. Med. Jour.*, Oct. 6, 1900), and are these: (1) Acute or chronic cholecystitis not amenable to medical treatment and occurring either independently or as complications and sequelæ of infectious disease. (2) Gall-stones in the bladder or ducts producing frequent attacks of colic with or without jaundice. (3) Palpable enlargement of the bladder, especially if pus is probably present. (4) Suspicion of phlegmon, ulceration or gangrene of the gall-bladder. (5) Of puncture, perforation or rupture of it. (6) Suppuration in the ducts of the liver. (7) Signs of stricture or foreign body occlusion of the ducts. (8) Of neoplasms or adhesions hindering the normal outflow. (9) Intestinal drainage is indicated when external is impossible. In order to facilitate the closure of the drainage tract from the bladder he follows this technic: The bladder is sutured to the parietal peritoneum in the usual way, but about three-quarters of an inch back from the wound in it. Mattress sutures are then placed in this manner. The first loop penetrates all the muscle layers of the wall, emerges just within the suture line above, then pierces at this point all coats of the bladder and, finally, passes again through all the bladder layers near the margin of the bladder wound. The second loop is just the reverse of each step. When tied, the free margin of the bladder is double upon itself so that the mucosæ are in contact and the peritoneum forms a complete margin of the bladder wound. When the drain is out, rapid adhesions are claimed to occur. Chromated gut is used.

Typhoid in Children.—The statistics of one hundred cases under fifteen years of age are given by A. D. Blackader (*Montreal Med. Jour.*, Sept., 1900). Four only were under two years, 13 between two and five years. In 13 cases the onset was sudden with marked gastro-intestinal disturbances. As initial symptoms headache occurred in 68 cases, vertigo in 19, anorexia in 49, chilly feelings in 12, chills in none, vomiting in 18, diarrhea in 36, constipation in 59. Fulness of the abdominal parietes was noted in 48 cases, abdominal pain in 33, tenderness in 15, epistaxis in 23, tonsillitis in 6. The step-like ascent of temperature at the onset was noted in only 8 cases. After the first week the temperature in most cases was markedly remittent, the evening temperature reaching normal, however, about the end of the third week. In 19 cases the fever reached 105° F., in 16 the temperature remained low and the fever lasted under two weeks. The spleen was palpable in 70 cases. Rose spots present in 55, tenderness in left hypochondriac region in 18. A diffuse erythema of neck and chest during the first week was noted in 2 cases. No severe hemorrhage occurred, but in 4 cases there were traces of blood in the stools. In 19, sonorous and sibilant râles were present at the bases of both lungs. A soft, systolic murmur at apex or base was heard in 22 cases. Drowsiness or semistupor and restlessness or sleeplessness occurred about equally; 18 cases had mild nocturnal delirium, and 1 only developed the typhoid state. There were cases with otitis, periostitis, and furunculosis. The Widal reaction was carefully sought for in 43 cases, in 3 of which it failed. It varied in its appearance from the fourth to the twenty-eighth day and once did not appear until convalescence had set in. The treatment consisted mostly in cool baths, beginning at 90° to 85° F. and lowering to 85° to 75° F. In 30 instances systematic sponges were given every three hours with water at 70° F. The stimulants used were whiskey or brandy, administered freely in some cases, and strychnine. The chief dietary was milk, diluted, if necessary. The author believes that alcohol is a rapidly and easily appropriated food. He advocates the use of the cool bath once or twice a day even after the pyrexia falls below 102° F. This procedure is not to be continued indefinitely however.

Jaborandi.—H. A. Jowett (*Brit. Med. Jour.*, Oct. 3, 1900) has contributed an important addition to our knowledge of the alkaloids of Jaborandi. Gerrard and Hardy isolated pilocarpin and later pilocarpidin and jaborin were isolated. Jowett, however, fails to find any trace of an alkaloid like jaborin and concludes that in true jaborandi leaves no such alkaloid exists. He has confirmed Marshall's report on the presence of an isopilocarpin, isomeric with this alkaloid, and identical with the alkaloid formerly named pilocarpin by Petit and Polonowsky. This leaves the alkaloids from true jaborandi to be pilocarpin, isopilocarpin and pilocarpidin.

THERAPEUTIC HINTS.

Urethral Chills.—To ward off chills following internal urethrotomy or the use of sounds, Weir prescribes:

℞ Morph. sulph.... .006 gm. (gr. 1/10)
Tinct. aconiti.... .15 cc. (♏ ij)
Ol. gaulther.....1.0 cc. (♏ xv)

Dormiol.—For the administration of this new hypnotic compound of chloral and amylene hydrate, the following formulæ are recommended:

℞ Dormiol, 10% solution..100.0 (℥iiiss)
Syr. raspberry.....ad. 120.0 (℥iv)

One to two tablespoonfuls at bedtime.

℞ Dormiol, 10% solut..... 90.0 (℥iij)
Ext. licorice..... 4.0 (℥i)
Syrup .....ad. 120.0 (℥iv)

Shake before using. A tablespoonful at bedtime.—*Merck's Archives.*

Amenorrhea.—Huchard orders that the lumbar region be rubbed, on retiring, with

℞ Chloroform ..... 10. (℥iiss)
Ether ..... 20. (℥v)
Spt. camphor..... 90. (℥iij)

This to be supplemented by mustard foot-baths, sinapisms to the internal aspect of the thighs, and vaginal injections of water from 105° to 120° F. As a tonic he gives

℞ Ferri et potass. tart..... 6.0 (℥iss)
Aloes socot..... 1.0 (gr. xv)
Ext. absinthii.....
Ext. artemisiæ.....aa. 2.0 (gr. xxx)
Ol. anisi..... 0.1 (gtt. iij)

M Ft. pil. No. 50. Sig., two after each meal.—*Journal de Médecine de Bordeaux.*

Intestinal Antiseptic.—

℞ Betanaphtol ..... 3.0 (gr. xlv)
Chloroform ..... 0.03 (gtt. xv)
Ol. ricini.....90.0 (℥iij)
Spt. menth. pip..... 0.02 (gtt. v)

A tablespoonful for an adult in port wine, beer, or sweetened black coffee; for a child, a teaspoonful.—*Journal de Médecine de Bordeaux.*

Whooping-Cough.—R. A. Lancaster recommends

℞ Tinct. belladonna...16.0-24.0 (℥iv-vj)
Spt. frumenti.....30.0 (℥i)
Phenacetin .....10.0 (℥iiss)
Fl. ext. castaneæ foliæ .....ad. 180.0 (℥vj)

M. Shake before using. From ten drops for a one-year-old child to a teaspoonful for a ten-year-old child every two to six hours.—*Jour. Amer. Med. Assoc.*

Inflation of the Middle Ear.—This, according to A. H. Buck, serves to push a drum membrane back to its normal position, and to give a kind of massage to the Eustachian tube and middle ear. There are three methods of inflation: (1) That of Valsalva, in which the patient holds the nose and distends the cheeks. It always makes congestion and may cause rupture of a small vessel in the ear, especially in old persons. (2) The Eustachian catheter, which is unpleasant to the patient, and by its hardness may irritate the Eustachian tube and retard the cure. (3) Pollitzer's method, in which a large rubber bag is connected with one nostril by a rubber tube and nose-piece. The patient is told to swallow, and as the thyroid cartilage rises, the bag is suddenly compressed. In the act of swallowing, the soft palate closes the pharyngeal opening of the nose, and at the same time the Eustachian tube opens, so that a maximum effect upon the ear is obtained.

Diuretic.—For an agreeable diuretic and to alkalize the urine, Peabody recommends that two solutions be kept on hand, as follows:

No. 1. Potass. acetat..... 25.0 (℥viss)
Potass. bicarb..... 12.0 (℥iij)
Aquæ .....ad. 240.0 (℥viij)
No. 2. Ac. citrici..... 10.0 (℥iiss)
Aquæ .....ad. 60.0 (℥ij)

Dilute with 60 ccm. (℥ij) of water 15 ccm. (℥ss) of No. 1-4 ccm. (℥j) of No. 2 and give in twenty-four hours.

Orthoform.—In nose and throat work, the reports of the use of this drug have been almost universally favorable. Brocq, however, has found orthoform sometimes irritating, and capable of exciting hyperemia and pruritus. In one case, a one-to-forty ointment caused swelling and redness lasting three weeks. Asam reports nine cases in which it produced inflammation, and Miodowsky observed a case of moist gangrene following the application of a five-per-cent. ointment.—*Year-Book of the Nose, Throat and Ear.*

Dislocation of Shoulder.—The rare backward dislocations of the humerus are best reduced in the following manner: The arm is raised to a right angle or the horizontal, extended, rotated, and then adducted, while at the same time the head is forced into the glenoid cavity by direct pressure from behind. If this is not successful, reduction is sometimes accomplished very easily by strong abduction of the arm with subsequent rotation inward, or by elevation of the arm and pressure of the head into the cavity.—*Tillmann's Text-Book of Surgery.*

Iodides in Locomotor Ataxia.—Roux, in a recent work on the sensory visceral derangements in tabes shows that iodide may irritate the stomach, alter the mucosa, and cause gastritis, with serious consequences. The pain is felt in the lower thorax, especially the left side, and may be severe; it is felt an hour or two after eating, increases gradually, and then disappears before the next meal. Vomiting may ensue, and persistence in the iodide may finally produce typical gastric crises. These are distinguished from true crises by their gradual onset and disappearance, by their development after gastric irritation or at the menses, and by their suppression with a milk diet and discontinuance of the iodide. —*Journal of Nervous and Mental Disease.*

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SATURDAY, NOVEMBER 3, 1900.

THE ETIOLOGY OF YELLOW FEVER.

A NEW and fertile field for research made possible by the brilliant work of Ross and the Italian observers in connection with the theory of the propagation of malaria by the mosquito has recently been further extended by four American investigators, Reed, Carroll, Agramonte and Lazear (*Philadelphia Medical Journal*, October 27, 1900), to yellow fever.

The mosquito as a factor in the propagation of yellow fever is by no means a new conception; as far back as 1881 Carlos Finlay of Havana ingeniously discussed such a relationship. Since then it has been revived from time to time by various writers, but, until the researches by the American writers just named, no definite investigations have been undertaken.

Reed and his co-workers were able to study the effects of the bite of the *Culex fasciatus* Fabr. upon 11 non-immune individuals with 9 negative results to infect and 2 positive results. Based on these results they feel justified in the conclusion that the mosquito serves as the intermediate host for the parasite of yellow fever, and that it is highly probable that the disease is only propagated through the bite of the insect.

To a critical reader, it must be confessed, however, that the conclusions, *in toto*, are scarcely supported by the evidence presented. The number of unsuccessful results, and the possibility of other modes of infection hardly seem to be taken into any consideration. Moreover to conclude that the disease is only transmitted by the bite of the mosquito appears to us a veritable *tour-de-force* of the imagination; in the first place they fail to bring forward enough clinching evidence to make the demonstration wholly conclusive, to say nothing of the fact that they have excluded no other possible mode of transmission. At most it can only be said that the work presented does little else than prove suggestive for what may be one important mode of transmission.

Another part of their investigation relating to the presence of the *bacillus icteroides* (Sanarelli) in yellow fever cases is equally full of interest. Contrary to a number of favorable results by some careful workers these observers believe that the *bacillus icteroides* stands in no causative relation to yellow fever, but when present should be considered as a secondary invader in the disease. For our own part, considering the excellent work done on both sides of the question, we would prefer to regard the matter still *sub judice*.

A NOVELIST'S VIEW OF MEDICINE.

OUIDA, that wise lady with the manlike mind, whose books many of us admire for their brilliant versatility, has lately launched a most unexpected diatribe against physicians and scientists in the *Humane Review*. It reads as though an incensed comet, whose tail a grave astronomer was endeavoring to measure, should say, "Cruel brother of creed-makers, you, who would measure my tail and express it in a formula, behold, I will measure its length upon your narrowing instrument," and with one sweep should smash his good telescope, and sail away thinking how smart it had been.

According to this article, the physician deliberately cultivates in mankind a terror of disease which renders him an easy prey to it and incidentally fills the physician's pocket. More deadly than the propaganda of the priest is the influence on the multitude of the scientist who "teaches men and women to see possible or probable death in every thing that approaches them," and leads them "to pass their whole existence in a stench of disinfectants." They are taught to "slink with fear of contamination from the rosy lips of a child and flee from the good-natured gambols of a merry dog."

Certainly it has been of some little value to disinfect after measles, to refrain from kissing a child with diphtheria, and to muzzle dogs that may have rabies. That narrowing cowardice, the deteriorating influence of which Ouida bemoans for the human race, does not work such ravages on the average human system as does any one of these curses which science has sought to mitigate. We are tempted to think that Ouida gets her science from the newspapers.

And then with an almost feminine lack of logic, she wants to know why the biologist and scientist do not lift their voices against war if they are really so anxious to save life, and concludes that it is only because the gold would not pour any faster into "the blood-stained apron of the licensed experimenter."

But Ouida knows something about medicine herself. She has had "personal experience of all the symptoms of 'angina pseudo-membranosa,'" and has several times seen a physician diagnose a disease as that, when she knew it was not that at all. We think we understand. Some professional man has not been duly impressed by her grasp of scientific subjects; may have intimated that "a little learning is a dangerous thing" or may have explained in a manner calculated to enlighten ignorance something that she knew perfectly well. What could be more odious? And what more natural than that biologists, scientists and physicians the world over should have their egoism and masterful exaggerations pricked by her forceful and discriminating pen!

THE BACILLUS PYOCYANEUS IN HUMAN PATHOLOGY.

CONSIDERING the important position that clinical bacteriology has assumed in the last ten years in its relation to practical medicine, it is surprising that more definite knowledge has not come to hand concerning a series of infectious processes incited by a group of organisms for a long time regarded as harmless to the human body. Of the whole number of bacteria belonging to this class, no single one possesses the same varied interest as the bacillus pyocyaneus. The history of its experimental achievements alone embodies some of the most absorbing themes of bacteriology.

Since the publication of the admirable researches of Charrin on this organism in 1889, some attention has been directed to the study of its relations to certain morbid phenomena encountered from time to time in human pathology. Systematic bacteriological examinations—unfortunately still the exception rather than the rule at the hospital bedside and in the post-mortem room—have brought forward sufficient evidence to establish at least a causative relation to a series of pathological lesions in the human subject. Among those most prominent in elucidating this chapter of human infections may be cited Charrin, Maggiora and Gradenigo, Calmette, Thiercelin and Lesage, Lartigau and several others.

Like the more important members of the pus-producing group of bacteria, the bacillus of blue pus may incite a wide range of different and unrelated processes. The observations of Martha and Maggiora and Gradenigo fix its relations to certain cases of purulent otitis media. In cutaneous and subcutaneous inflammations it has been met with in human beings, causing gangrenous processes, suppurative phlegmon, vesicular eruptions and exfoliative processes. Among the more common of the lesions of the respiratory tract are bronchopneumonia and pleuritis. G. Blumer demonstrated the presence of this bacillus in practically pure cultures in a case of acute angina clinically simulating diphtheria. Except in instances of general infection the circulatory system usually escapes; the bacillus pyocyaneus has, however, been isolated from valvular vegetations of the heart. Judging from the number of cases reported, urinary infection with this organism is relatively common; until very recently ascending pyocyanic urinary infection has not been recorded. A report of three such cases has just been contributed by Blumer and Lartigau (*N. Y. Med. Jour.*, September 22, 1900). The urinary lesions were those of inflammatory hyperplasia.

One of their cases is of particular interest from the chain of nervous symptoms presented. These were partial paraplegia and exaggerated reflexes succeeded by complete paraplegia, loss of reflexes, anesthesia and analgesia. No demonstrable cord lesions were present to account for these phenomena. This symptom-complex is of especial interest, owing to its similarity to that described in a case by Jadkewitsch, arising from similar infection.

By far the best known infections are those which relate to the gastrointestinal tube; for the most part this type of pyocyanic infection has been most commonly observed in infants. These have been so thoroughly studied by Neumann, Cadet de Gassicourt and Lesage, that little seems

wanting in that direction. In these days when the etiology of dysentery is exciting considerable attention the rôle of the bacillus pyocyaneus in one or two epidemics has somewhat more than passing interest. In Cochin-China Calmette found this organism in dysenteric stools, but just how far it was etiologically concerned is somewhat uncertain. That it is capable, however, of inciting such a disease has been abundantly shown by Lartigau. His investigation of the epidemic at Hartwick, New York, in 1898, demonstrated the presence of virulent bacilli, in large numbers, in both the drinking water and stools of the affected individuals. Of the fifteen persons infected eleven recovered and four died.

That the bacillus pyocyaneus does enter the blood, giving rise to a general infection, there can no longer be any doubt. The clinical evolution of the *maladie pyocyanique* in man resembles, in a general way, the other better known forms of septicemia and some of the acute febrile diseases. The general symptoms are those of an infectious disease. Epistaxis has been observed; the spleen is enlarged, and the urine sometimes contains small amounts of albumin and casts. Intestinal disturbances occur with great frequency; diarrhea seems to be the rule. Cutaneous manifestations are very frequent and appear either in the form of bullous eruptions or petechiæ; more rarely is the papular rash observed. The picture thus often simulates typhoid fever. Death occurs in from forty-eight hours to five days or more. The post-mortem examination shows vasomotor disturbances, focal necrosis, hemorrhages, and lesions of the parenchyma of the heart, liver, spleen and kidneys. Intestinal ulcers are common, especially in the less acute cases, and rarely involve more than the mucous membrane. Hemorrhagic enteritis may exist.

ECHOES AND NEWS.

NEW YORK.

The Tarrant Catastrophe.—The frightful explosion of chemicals which shook lower New York City, Monday noon, destroyed a score of lives, completely wrecked two business blocks, and caused scenes of terror never before witnessed in the metropolis, was at first believed to have wiped out of existence two of the oldest and most widely known makers of proprietary medicines in the country, Tarrant & Co., in whose new and substantial seven-story building the accident occurred, and M. J. Breitenbach & Co., whose main office and store-rooms were in the same block. It was soon learned, however, that all of the members of the two firms, and all but one of the employees had almost miraculously escaped with their lives. The details of the terrible occurrence have been made familiar through the daily press, but the following statements as to the condition of the companies will be of interest to the medical fraternity. They were made to the MEDICAL NEWS by Mr. Thomas F. Main, president of the Tarrant Company, and by Mr. M. J. Breitenbach.

Mr. Main said: "In the present confusion we cannot state our plans definitely, though we are straightening out matters as rapidly as circumstances will permit. We expect not only to continue the business, but to begin filling orders regularly within a few weeks. Should we fail to recover any of our books and papers we shall of course be greatly handicapped, but in any event we believe that the delay in resuming shipments will not be protracted." His explanation of the three explosions was: "They were caused by the mixed vapors and gases from the large quantity of chemicals stored in the building, which had been liberated by the fire and the smaller explosion. We had no nitroglycerin."

Mr. Breitenbach said: "We shall resume business at once. We are so situated financially that we do not need to wait for the adjustment of the insurance. That there will be some confusion and delays is unavoidable, but we do not anticipate that they will be serious."

Both companies are occupying temporary quarters at No. 68 Murray Street, New York City, where all correspondence should be addressed until further notice.

Herbalist Practised Medicine.—Cornelius Edisan, a botanist of Richmond Hill, L. I., was held in $500 bail last week in the Lee Avenue police court, Williamsburg, pending a hearing on the charge of practising medicine without a diploma. He is sixty-three years old and well known in Queen's County.

New York's Prison Population.—According to the report of the State Prison Commission, in process of preparation, there has been a net increase of only six prisoners in the State prisons, county penitentiaries, the Elmira Reformatory, and the reformatories for women during the year ending September 30th. The decrease in inmates of prisons and reformatories throughout the State since 1895 is 2615.

Flushing Hospital.—The Flushing Hospital may soon close its doors because of lack of funds to support it. The hospital authorities have issued a statement, showing that it costs $14,000 a year to run the institution. The city gives the hospital $6000 and about $3000 is derived from pay patients. This leaves a balance of $5000 to be raised by subscription. The trustees of the hospital have appealed to the citizens of Flushing to save the hospital.

New York's Death-Rate.—Dr. Henry Dwight Chapin, Chairman of the Committee on Hygiene of the Medical Society of the County of New York, in his annual report, which is just out, among other items, says: "There is happily no special feature to record in reference to the public health of New York City during the past year. The deaths from diarrheal diseases, gastro-enteritis and enteritis may be considered as a fair index in the relation to the general death-rate of the general health and sanitary condition of the community. During June, July, August and September of 1900, 2692 deaths were reported from these causes in the boroughs of Manhattan and The Bronx. This does not represent an unusual number, in comparison with previous years, in spite of the great and continuous heat of the past summer. . . . The general death-rate during 1899 was 19.8 per thousand (it was 20.5 in 1898) and there has been a tendency to a lower death-rate during the past few years. This may be accounted for by a lessening of the virulency of influenza, by better paving of streets, and a more careful oversight of water and milk supply." Dr. Chapin calls attention to what he considers the immediate necessity of taking steps to increase the city's water supply and quotes extensively from the Merchants' Association report on the New York Water Supply. The subject of pure milk is also considered.

PHILADELPHIA.

Anthrax from Fly-Bite.—Michael Bednovick, a tanner of Williamsport, is suffering from anthrax. The disease developed from a fly-bite on the man's arm, the fly presumably having come from diseased hides about the place.

Diphtheria Still Prevalent.—The Haverford College Grammar School has been closed for ten days, although but one case of diphtheria had developed. During last week 119 new cases were reported in the city, one Sunday School being closed to prevent the spread of the disease.

Nurses Graduate.—A class of six nurses was graduated from the training school of the Children's Homeopathic Hospital October 30th.

Death at Advanced Age.—The death at Pittsburg of the oldest man in the State is announced. He was a negro and was proven to be 116 years of age.

Honor for Dr. Lee.—Dr. Benjamin Lee, President of the State Board of Health, was elected president of the American Public Health Association at its recent meeting in Indianapolis.

Filters in Progress.—The residents of Manayunk and Germantown will be the first to get filtered water. Work on five filter-beds, each half an acre in area, is to be begun at once and will be completed in six months. The capacity of this plant will be 6,000,000 gallons daily.

Suspected Foul Play.—Poisoning having been suspected in the case of Dr. Geo. W. Bull who was buried some time ago, the body has been exhumed and the viscera removed for examination. Dr. John Marshall, of the University of Pennsylvania, is to conduct the examinations.

Obituary.—Dr. M. J. Grier died suddenly October 28th of stomach trouble, aged sixty-three years. He was one of the pioneer specialists in nervous diseases and the first physician in this city to apply electricity as a remedy for nerve ailments. Dr. Grier also devoted some time to diseases of the throat and treated many famous singers. He was well advanced in Masonry.

Dr. Geo. A. Muehleck, who died October 24th of typhoid fever, was one of the prominent physicians of the southern section of the city although he was only forty years of age. During the past four years he has been pathologist to St. Agnes' Hospital.

Eucain Anesthesia.—On October 27th Dr. W. B. Van Lennep of the Hahnemann Hospital did an operation upon a case of inguinal hernia under anesthesia induced by injecting eucain into the spinal cord. The patient was a middle-aged white man and he stood the operation well, anesthesia being complete. It has been reported that Dr. Keen's case of October 3d was not successful because the patient afterward died. The death occurred three weeks after the operation, however, and was due to a condition entirely apart from the hernia which was operated on under the spinal anesthesia. Eucainization of the cord, therefore, was in no way responsible for the death of the patient.

Druggists Engage Counsel.—Only five of the many druggists arraigned here for violating the law by not properly displaying their certificates in their stores have paid their fines. The remainder have engaged counsel and will fight the matter in court. A mass meeting is to be held for the purpose of determining on concerted action. In Pittsburg it is claimed that "drug" stores which sell only liquors have been found. In others the detectives employed by the Pharmaceutical Board had prescriptions filled by soda-water dispensers. These actions should of course be stopped, but some of the suits brought against druggists in this city because their certificates were not hanging in the right place seem like persecution.

Honor for Dr. Stengel.—The Board of Managers of the Pennsylvania Hospital, at a meeting Monday afternoon, October 29th, elected Dr. Alfred Stengel visiting physician, to succeed the late Dr. Da Costa. Dr. Stengel is physician to the University and Children's Hospitals, director of the Pepper Laboratory at the University of Pennsylvania, professor of clinical medicine at that institution, editor of the "American Journal of Medical Science" and author of "A Textbook on Pathology." He was graduated from the University in the class of 1889.

CHICAGO.

Diphtheria.—On October 22d the Medical Inspectors closed four rooms at the D. S. Wentworth School, on account of diphtheria among the scholars, and one room at the McCosh School on account of scarlet fever.

Indicted by Federal Jury.—The names of James Armstrong, Thomas Armstrong and John H. Randall, officials of the Metropolitan Medical College, known as a diploma mill, are included in one of the 65 true bills returned by the Federal Grand Jury in the United States District Court.

Public School Medical Inspection.—Last week 2521 pupils were examined by medical inspectors, and of these 184 were found to be suffering from contagious or infectious diseases. In the Board of Health account the other day of the October weekly mortality, attention was called to the fact that during the twenty-five school days since September 7th, the inspectors have examined 9770 ailing children in the public schools, and 694 of these were found to be suffering from contagious diseases liable to spread to other pupils with whom they were in the close contact of school attendance. Among these were sixteen cases of diphtheria, 17 of scarlet fever, 17 of measles, 30 of whooping-cough, 36 of chickenpox, 126 of tonsillitis, 65 of mumps, 13 of purulent sore eyes, 123 of impetigo contagiosa, 145 of pediculosis, 25 of ringworm, 24 of eczema, and 47 of other contagious diseases. These facts and figures establish beyond question the utility of medical inspection as a department of school work and administration.

GENERAL.

Resting Position of Anopheles.—Messrs. Sambon and Low state (*British Med. Jour.*, Oct. 20, 1900) that the generally accepted view, first enunciated by Ross and Austen, that the resting position of Anopheles is sufficient to differentiate this genus from Culex, is not true.

Obituary.—Dr. Moses C. White, eighty-one yars old, for years professor in the Yale medical school and for the past fifteen years the Coroner's medical examiner for New Haven, died at midnight, October 25, 1900. He was born in Paris, Oneida County, New York State. He was a graduate of Wesleyan University and of the Yale medical school. He was a missionary in China from 1847 to 1852.

Dr. Alexander H. Johnson, a member of the Board of Health of Newark, N. J., died very suddenly October 26th, at Indianapolis, of heart failure. He was a delegate in attendance at the National Convention of the American Public Health Association.

Sir Henry Ackland, Regius Professor of Medicine in the University of Oxford, died in Oxford October 16th. He was born in 1815 and for sixty years has been closely identified with the life at Oxford.

Medical Students in Italy.—The *Supplemento al Policlinico* of September 15th records that 6648 students were studying medicine during the past academical year in the Italian Universities. These were distributed as follows: Naples, 2209; Turin, 783; Rome, 530; Bologna, 504; Pavia, 496; Genoa, 358; Padua, 309; Palermo, 270; Florence, 260; Pisa, 218; Modena, 152; Catania, 167; Parma, 175; Messina, 128; Sienna, 81; Cagliari, 75; Sassari, 54; Camerrio, 30; Perugia, 29; Ferrara, 15.—*Lancet.*

Dr. Potter Resigns.—Dr. Samuel O. L. Potter has resigned from the Board of Trustees and from the Chair of Theory and Practice of Medicine and Clinical Medicine in the College of Physicians and Surgeons of San Francisco, and has severed his connection with that institution, of which he was one of the incorporators.

Sickness in Philippines.—The report of Surgeon-General Sternberg, U. S. A., says that the present force of the Medical Department consists of 192 officers, which he says is not enough, in view of the large number of coast-defence stations and the troops operating in Cuba, Porto Rico, Hawaii, and the Philippines. The contract surgeons have rendered excellent service, but the Surgeon-General thinks the corps should be increased. Reference is made to the good work the army nurse corps has performed. The medical statistics in the report relate entirely to the calendar year 1899, and nothing is given concerning the statistics for 1900. The Surgeon-General explains the conditions in the Philippines as follows: "The exposures, fatigues, and excitements of a prolonged campaign are responsible for the large sick report and the relatively large death-rate among the troops in the Philippines. However, the opinion is prevalent among our medical officers that in time of peace, and doing only garrison duty, the sick rate of the army in the Philippine Islands would be no higher than it ordinarily is in the Southern United States."

Assistant in Serum Therapeutics.—The United States Civil Service Commission announces that on November 20, 1900, an examination will be held for the position of assistant in serum therapeutics, Biochemic Division, Bureau of Animal Industry, Department of Agriculture. The examination will consist of the subjects mentioned below which will be weighed as follows:

1.	Letter writing (first grade)	10
2.	Elementary general chemistry	20
3.	Serum therapeutics	60
4.	Training and experience in laboratory work	10
	Total	100

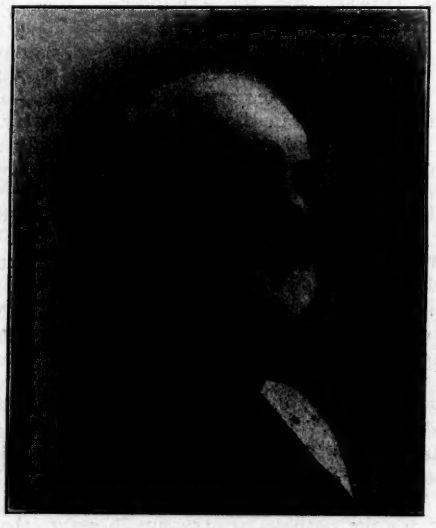
Age limit twenty years or over. From the eligibles resulting from this examination it is expected that certification will be made to the position of assistant in serum therapeutics, Biochemic Division, Bureau of Animal Industry, Department of Agriculture, at a salary of $720

per annum, and to other similar vacancies as they shall occur. This examination is open to all citizens of the United States who comply with the requirements and desire to enter the service. All such persons are invited to apply, and applicants will be examined, graded, and certified with entire impartiality and wholly without regard to any consideration save their ability as shown by the grade attained in the examination. Persons who desire to compete should at once apply to the United States Civil Service Commission, Washington, D. C., for application forms 304 and 375, which should be properly executed and promptly forwarded to the Commission.

OBITUARY.

DR. EDWARD R. SQUIBB.

A MAN whose service to medicine was unique has just died at the age of eighty-one years. Dr. Edward R. Squibb was a graduate of the Jefferson Medical College of Philadelphia, and began his medical career as a surgeon in the United States Navy. Some years later while he was acting as surgeon in charge of the Brooklyn Navy Yard Medical Station, the Civil War broke out, and he was called upon to make use of his knowledge of drugs for the benefit of the Government. His scientific knowledge and skill in the manufacture of pharmaceutical preparations was so great that he saw the need of an excellently equipped laboratory for the perfection of results. As the Government would not supply him with sufficient funds, he fitted up a private laboratory, resigned his government position, and began what has been one of the most valuable life-works that this country has known in the history of medicine, for it was medicine itself of which he was the master. A chemist and a physician he was, with all the keen desire of the true scientist to discover remedies and of the doctor to apply them to human ills. Instead of practising at the bedside with the drugs the names of which he had learned in his medical books, he studied the drugs themselves, chemically, physiologically, therapeutically, and sent them out to his brother practitioners in such form that the whole country, in fact, the profession of the round world, accepted his dictum, and made his name the standard mark for purity and accuracy in pharmaceutical preparations.



DR. EDWARD R. SQUIBB.

His laboratories in Brooklyn have served for nearly half a century as models for all others. So far was he from being the mere manufacturer of medicines, as we to-day understand the term, that he never advertised. His work was recognized as the work of a man of genius for science; and physicians regarded themselves as middle men merely handling what his knowledge and skill had pronounced to be good.

An accident in an explosion in one of his laboratories many years ago nearly caused the loss of his life, at least, it was feared, of his eyesight. He recovered, however, with only a facial disfigurement, which perhaps led him to be more retiring than a man of his fame generally is. His works were widely known through his preparations and his scientific writings, but the man himself was known only to an intimate circle of warm friends. Among these, however, were many physicians who realized that the force and integrity of his character underlay the success of their own work.

He was a man of literary attainments, and of a keen critical ability. He was a member of the New York State Medical Association, the Kings County Medical Association, the Metropolitan Museum of Art, the Philosophical Society of Philadelphia, and many minor societies of kindred character.

For about ten years the active management of his great business has been in the hands of his sons, so that the name so familiar to physicians and pharmacists will, by virtue of the trust implied in it, continue to be worthy of the founder.

Plague at San Francisco.—Cases reported of the 5th and 10th of October have been confirmed by bacterial examination.

Plague from the Philippines.—Government inspectors report that the steamer Bon Lomond, which arrived in London on Friday, October 30th, from the Philippines, had a verified case of plague on board. The victim was removed to a hospital, and the steamer was disinfected.

Dr. Seymour Oppenheimer.—In our report of October 20th of the New York State Medical Association we printed Dr. Oppenheimer's name as Dr. Seymour.

CORRESPONDENCE.

OUR LONDON LETTER.

[From Our Special Correspondent.]

LONDON, October 16, 1900.

OPENING OF THE MEDICAL SCHOOLS—INTRODUCTORY ADDRESSES—PROF. CLIFFORD ALLBUTT'S ADDRESS ON ABSTRACTIONS AND FACTS IN MEDICINE—THE SOUTH AFRICAN HOSPITAL COMMISSION—ARREST OF THE OUTBREAK OF PLAGUE IN GLASGOW—THE POLYCLINIC—MR. JONATHAN HUTCHINSON ON THE "ADVANTAGES OF CIRCUMCISION"—RELATIVE IMMUNITY OF JEWS TO SYPHILIS.

WITH this month of October the medical schools begin a new session. The usual crop of introductory addresses has sprung up all over the country and the medical journals are full of them. As I read these excellent productions, so lofty in tone, so full of good advice to those entering the profession, and, above all, so ambitious in their attempts to tell us what Medicine (with a big M) is, what are its limits, its position in the hierarchy of the sciences, its origin and development in the past, its possibilities in the future, and its services to humanity, some disquieting reflections arise. I have read these philosophical disquisitions year after year for many years, but the problems they discuss seem no nearer a solution. No progress is made, nothing definite is established; we simply move in a circle. Is medicine a science or an art? Is there any truth in the alleged opposition between theory and practice? These are questions which still can be discussed *ad infinitum*. But in the introductory addresses of this year there is one which, by its originality, its boldness of thought, and its philosophical acumen stands out above the rest, and is worthy of attention—the address delivered by Dr. Clifford Allbutt at the Middlesex Hospital. In the application of all the sciences to medicine, that is to say, to a well-meant interference with the most complex and obscure of known machines, there is need, he said, not only of positive knowledge and the scientific habit of mind, but also of a large collection of approximate empirical truths or maxims, for a certain shrewdness and dexterity in the use of such imperfect means and for some insight into men. On the other hand, traditional lore may be handled too reverently; the very provisional nature of practical rules is apt to be forgotten. Every man, as Chateaubriand said, is two men, the man of his time and the man of all time; in some the former, in some the latter character prevails. In the present state of medicine Dr. Allbutt finds a wholesome tendency to the fall of diseases as abstract names and to the rise of the patient. Principles of causation and therapeutics are falling out of fashion and cautious "opportunist" uses of facts and tentative methods are taking their place. The iatromechanical principles of medicine were followed by the iatrochemical, by doctrines of stimulants, of antiphlogistics, of irritability, and so forth. It is to be hoped that physicians will become still more careful in reasoning in abstract terms, for every abstract term is such by virtue of more or less negation; so that a language void of much of its contents is, for purposes of rapidity, employed, just as in traveling by rail a knowledge of the country traversed is sacrificed for speed. There is no such thing as, say, "enteric fever" or "diphtheria;" these are not things but abstract conceptions, the realities being large numbers of individual patients, no two of whom are alike and many of whom are very unlike. If we persist in reasoning in abstract terms only our conceptions become hollow. Thus, in therapeutics volumes of empty stuff are written about tonics, alteratives, and so forth, which is but pasteboard knowledge. The remedy for this easy vice is reiterated and indefatigable reference of every abstract term to its supposed content of facts, and of principles and names of diseases to patients. Dr. Allbutt concluded by advocating the pressing need in all hospitals of clinical laboratories. Mere observation of disease and morbid anatomy have taken medicine almost as far as they can. To keep alive for a year or two a patient who is already in some part half dead is but a poor achievement. Morbid processes must be tracked out to their earliest dynamic initiation. The clinical laboratory of a county hospital should be the center of enlightenment to all the private practitioners of the district.

The South African Hospital Commission held its opening sitting at Kimberley on October 1st. The doctors and members of the hospital staffs agreed that the hospitals in the town were well arranged and equipped and that no complaints had been made. But the evidence of soldiers was directly contradictory. They complained of bad treatment owing to administrative incapacity. At Paardberg, they said, the field hospitals were so badly placed that men lay in pools of water. The camp at Maitland was in a similar position, the men lying in tents full of water, many without blankets, overcoats or oilskins. At Cape Town evidence was taken on October 4th. One of the hospital ships was described as filthy and the milk and food supplies as bad. The civil surgeon of the Tuli hospital complained that the authorities would do nothing. Horses, he said, were allowed to die and rot near the tents, and it was impossible to procure the necessary medicine. Three patients, including one Boer prisoner, died in consequence.

The progress of the plague in Glasgow may be considered completely stayed. No fresh cases have occurred since September 19th. The number of cases in the Belvidere Hospital remains at 21 with 2 still doubtful. Eight more persons who have been in contact with plague-stricken patients have been dismissed from the reception-houses, reducing the number of inmates to 6.

At the Polyclinic Mr. Jonathan Hutchinson de-

livered an important lecture on the advantages of circumcision. The most obvious advantage, he said, was cleanliness. This is important in childhood. In adults the habit of withdrawing the skin and washing the glans has usually been learned, though it is not practised sufficiently. In children it is not, as a rule, attempted; most boys would regard the attempt as indecent, and in many paraphymosis would result. Moreover, the practice would be injurious to morals; yet the accumulation of smegma and its decomposition is a source of annoyance and irritation to many boys. Further, any irritation of the glans penis is liable to produce reflex excitement of a character to be avoided. In middle life to many the possession of a prepuce is a source of more or less habitual annoyance. Seborrhea, balanitis, and herpes are common. As old age comes on the danger of cancer to those who suffer from phymosis is considerable. Similarly, circumcision tends to prevent syphilis. Mr. Hutchinson has found that, while gonorrhea is quite as common among Jews as among Christians, syphilis is much less so. This shows that it is not on morality that the comparative immunity of Jews to syphilis depends. The only possible explanation is the absence of the prepuce. It would be difficult to contrive an appendage more likely to facilitate the implantation of the syphilitic virus than the prepuce. No measure which has ever been proposed for the prevention of syphilis is as efficient as circumcision. Unlike other measures, such as the inspection of prostitutes, it has no collateral influence prejudicial to morality, nor does it offend the sense of decency. Finally, circumcision probably tends to increase the power of sexual control. The only physiological advantage which the prepuce can be supposed to confer is that of maintaining the penis in a condition susceptible to more acute sensation than would otherwise exist. It may increase the pleasure of coition and the impulse to it; but these are advantages which in the present state of society can well be spared. If in their loss increase in sexual control should result, one should be thankful.

TRANSACTIONS OF FOREIGN SOCIETIES.

British.

CEPHALOTRIPSY OF THE AFTERCOMING HEAD—UTERINE FIBROIDS—VAGINAL HYSTERECTOMY—POSTPARTUM HEMORRHAGE—TOXIC LARYNGEAL PARALYSIS—CAMP SANITATION—SMALL-BORE RIFLE WOUNDS.

J. H. TARGETT, at the British Medical Association meeting, held at Ipswich July 31 and August 1, 2 and 3, 1900, recommended as the sites for perforation of the aftercoming head the region behind the ear, and the suboccipital space. This operation is not infrequently attended by much difficulty, especially if the head is retained above the brim of a contracted pelvis and the lower segment of the uterus is imperfectly dilated. Perforation through the mouth then becomes almost impossible, and even the suboccipital space may be hard to reach. If the latter route is chosen the aperture is liable to be directed too much toward the foramen magnum, so that the exit of brain matter is impeded. Moreover the cerebellar fossa is alone opened, the larger part of the cranial cavity being practically shut off by the tentorium. Perforation behind the ear meets this objection, but it is important to work well above the root of the mastoid process, and this site is higher and more difficult to reach than the suboccipital region, at least in the cases of marked pelvic contraction. To avoid laceration of the cervix one blade of the cephalotribe should be passed into the aperture made by the perforator while the other blade is adapted to the exterior of the head. Experiments have shown that the best grip is obtained by inserting one blade into a suboccipital perforation, while the opposite blade is applied over the face. Assuming that the woman is in the lateral obstetric position and that the pelvis is flattened, it will be most advantageous to have the long axis of the head engaging the transverse diameter of the brim with the occiput uppermost, and if the occiput happens to be forward the head should be gently rotated in the required direction. The trunk must then be drawn forward as far as possible to give room for the application of the cephalotribe posteriorly. The advantages of this method are that the head is seized by its base in the chief anteroposterior diameter, that the most rigid part of the skull is thus effectually crushed or strongly flexed on the spine, that a very firm grip is obtained, and, lastly, that it is easier to apply the cephalotribe.

Some ten or twelve years ago Dr. Donald, of Manchester, published an able paper on the methods of craniotomy for cases of severe pelvic contraction. He recommended a preliminary podalic version and extraction of the body, then perforation through the roof of the mouth, and, finally, crushing and extraction of the aftercoming head. The advantages claimed were that the base of the skull was thoroughly broken up and that the head could be easily rotated into the best diameter and well fixed by traction. This advice is quoted by most writers on obstetrics, but the practice is not carried out in any of the large London maternities. Version after cephalotripsy is very rarely adopted.

ALBAN DORAN said that the first question with relation to the natural history of the uterine fibroid is its pathology. Microscopically neither a fibroma nor a myoma, it partakes of the characters of each with those of the latter predominating, and hence approaches the uterine tissue more or less closely. This is affected by ergot, hence ergot has been used for fibroids, acting then because the structure is rather uterine than myomatous. Although nobody would think of curing a fibroma of the periosteum with drugs,

ergot has been of much value in these uterine neoplasms. But the association of them with cardiac lesions often contraindicates its employment. A second important factor is the relation between the ovaries and these tumors. Notwithstanding the long painstaking research in Germany, no one can claim to understand all about normal menstruation nor much about the relation the ovary has on the growth of fibroids. But clinical experience shows us that in some cases the removal of both ovaries is followed by a reduction in the size of the tumor. Failure of this result has shown merely that it is not an essential sequel and leaves us in doubt as to whether all of the ovarian tissue has been ablated. The ovarian ligaments often contain sufficient gland-tissue to account for a certain number of these failures. In fact the speaker recalled successes when gland-substance was known to have been unavoidably left behind. Another fact associated with fibroids is bleeding. We do not understand why in many there is much hemorrhage, while in many more there is none. But until menorrhagia and metrorrhagia are themselves better understood independently of fibroids little surprise need be felt. The question of the rate of growth of these offenders is never surely answered, as all degrees are encountered. Upon menopause their effect seems one of delay, often by several years; while they do not perhaps really cease to grow, they rarely give trouble after the climacteric. As to treatment, enucleation of the small fibroid, hysterectomy where this cannot be done, and electricity in a few cases sum up the matter. Medicines, except for some of the symptoms, do not do much good.

M. A. D. SCHARLIEB stated the limitations of vaginal hysterectomy to be in cancerous disease (1) local extension of the process beyond the uterus; (2) infection of the pelvic, iliac lumbar and other glands; (3) metastases in distant organs, as lungs and liver; (4) concomitant disease of the body as diabetes and nephritis. Unless respect is had for these points the statistics of the operation will suffer and the ultimate results in given cases will not be satisfactory. Duty to the patient, to ourselves and to the operation demands careful survey of all these considerations. Of thirty-five cases tabulated from the records of the New Hospital for Women in London four died within one month after the operations, one of kidney disease, one of shock from a too long and difficult operation, and two of sepsis. Due review of all conditions would probably have avoided each.

JOHN W. BYERS classes all postpartum bleeding as of three kinds, due either to uterine atony with patent vessels at the placental site or to wounds of the parts of the parturient canal without any uterine inertia, or to both combined. The onset of a severe hemorrhage may be expected (1) when there is a history of it during previous confinement; (2) with uterine relaxation due to too frequent childbearing; (3) with ill health due to too little exercise and overfeeding; (4) with great mental depression, as at the death of the husband; (5) with the circulatory excitement late in pregnancy; (6) with overdistention of the uterus in twins and hydramnios; (7) with tumors of the uterus preventing contraction; (8) elderly primiparæ; (9) preexisting metritis; (10) albuminuria; (11) short, jerky paine, with intervals between them longer than the pains themselves; (12) short, rapid pulse, rather jerky and of low tension. The prophylaxis which should be adopted in all deliveries consists in the proper management of the third stage of labor and in the principle never to deliver in the absence of true uterine pains. The placental stage of labor consists of two factors, the separation and the expulsion of the afterbirth. Nature herself usually performs the separation perfectly and often adds complete expulsion, but the latter is the step in which the accoucheur is called upon to render assistance. The signs of the freeing of the placenta naturally are so definite that every practitioner should know them and be in that way prepared to avoid attempting to separate them himself directly risking retention of membranes, sepsis and postpartum hemorrhage. The details of the placental period of delivery may be reviewed thus: As soon as the head of the child is born, the left hand of the accoucheur grasps the fundus, the ulnar border being apposed to the vertebral column of the mother, and during the balance of the delivery the hand never leaves the uterine fundus. If the child is asphyxiated, or for other reason, the nurse may follow the fundus down. The hand remains in contact with the uterus throughout in order to perceive the separation of the placenta, but no massage of the organ should be indulged in at these periods. The separation of the placenta is shown by these indubitable signs: (1) A sudden rising up of the uterus which may have been largely in the cavity of the pelvis; (2) a swelling in the lower uterine segment bulging over the pubic symphysis much like a distended bladder, with which it has often been confused; (3) greater mobility of the uterus; (4) expulsion of a few more inches of the cord, shown by the advance of the ligature which, after a slight pulling on the cord to straighten it in the vagina, was placed close to the vulva. After the separation is thus manifest, expulsion occurs naturally or by pressure on the fundus after Credé's method. Examination of the afterbirth should now be made for fragments of it or of its membranes or for placenta succenturiata retained. The massage of the fundus may now be begun, when the cavity is manifestly empty. The other important step in delivery is never to empty the uterus in the absence of pains, but rather by sedatives secure rest for the mother and wait for the contractions to appear again. When from history and other facts hemorrhage is to be expected, the prophylaxis to be maintained is rigid and sensible hygiene throughout pregnancy and slow, careful

delivery. Chloride of calcium, thrice daily, for a few weeks before confinement may be of value. The treatment of the actual hemorrhage is foremost to have at hand all the necessaries for this often unexpected trouble. The means are uterine massage, copious, hot, sterile-water intrauterine injections, cleaning of the cavity of membrane and placental shreds, bimanual compression, and firm gauze tamponade. The Vienna school recommends drawing the uterus far down into the vagina or even everting it, in order to close the sinuses and kink the arteries. Injections of styptics, especially of perchloride of iron, are not safe. Hemorrhage from tears of the parturient canal requires suture, ligature and tamponing according to circumstances. The after-treatment in all cases is stimulation, intravenous infusion of normal salt solution, subcutaneous injections and high rectal enemata of the same. Later come good food and tonics.

P. W. WILLIAMS recited the common causes of toxic paralysis of the larynx as being grouped, either as infective neuritis commonly occurring in the course of a diphtheria, less frequently in typhus fever, typhoid fever, scarlatina, morbilli, influenza, rheumatism, tuberculosis, syphilis, cholera and malaria, or as tonic neuritis most commonly due to lead-poisoning, also ascribed to arsenic, copper, antimony, phosphorus, alcohol, atropine and morphine. The treatment of these conditions consists in the proper management of the original infectious disease and of elimination of any known poison. Locally galvanism and faradism and if possible strychnine, otherwise strychnine systemically, intubation or tracheotomy to relieve dyspnea due to bilateral abductor paralysis, especially common in diphtheria and typhoid fever.

MAJOR JAMES stated, in discussing the subject of sanitation in camps, that the conditions of camps are so various and depend upon so many circumstances that there are few points of detail that apply to all. The objects to be kept in view are: (1) Protection of troops from weather and climate. (2) Feeding them, and preventing disease communicated by food. (3) Disposal of excreta and refuse. (4) Prevention of local and endemic disease. (5) Prevention of spread of communicable diseases. The possibility of properly carrying out sanitation must depend upon several circumstances: (1) Choice of site; whether this is governed primarily by strategic or hygienic considerations, and whether the first consideration is to make it a defensible or healthy camp. (2) Whether the camp is a standing or temporary one. (3) Whether the supplies can be obtained locally, wholly or in part, or whether the transport is sufficient to make available plenty of food, tentage, and stores. (4) The climate. In any case the art of camping is one which depends upon ingenuity, and the longer troops are in the field the better accustomed they become to making themselves comfortable. The following remarks apply to camps where some stores are locally obtainable, and the class of country—China and South Africa—where British troops are now and may be shortly engaged. The primary essentials for properly carrying out measures of sanitation in camp are discipline and intelligence among occupants, and an efficient and well-instructed sanitary staff. It is to be remembered that while troops are doing hard work under exciting circumstances they are generally fairly healthy, and that it is when they are idle or when the excitement is passing that they become sick. Water supply is one of the most important things to supervise, and most of the commonest camp pests in the shape of enteric fever, dysentery perhaps, and cholera, are waterborne. The distribution must be as closely watched as the origin, and this in camp is a great difficulty. When men are thirsty they will drink anything and anywhere. He believes something could be done by education to restrain a man at ordinary times, but when the weather is hot and water scarce reason has to give way to impulse. If, however, water is plentiful and good and obtained from a stream, a spot above the camp should be marked for drinking; lower down for horses, and lower for bathing and washing clothes. The point of obtaining the drinking water should be policed, and the stream above as well as the area draining into it put out of bounds.

CLINTON DENT said that, broadly speaking, in the South African campaign bullet wounds had done extremely well. Remarkable recoveries were numerous and many badly wounded had been able to return to duty. Amputations were proportionately very few. These results were doubtless due to the small-bore, high-velocity ball and the great advance in field and base surgery.

SOCIETY PROCEEDINGS.

NEW YORK NEUROLOGICAL SOCIETY.

Stated Meeting, Held June 5, 1900.

The President, Frederick Peterson, M.D., in the Chair.

Exophthalmic Goiter.—Dr. Mary Putnam Jacobi presented a case of this disease treated by intestinal antiseptics. B. D., was first seen February 8, 1899, aged twenty-two years. She had been well until the age of twenty, when she began to work at a shop for making infants' clothing. She worked from eight until five on button-holes and feather-stitching. She began to suffer much from constipation, relieved by frequent purgation with licorice powder. At the end of a year menstruation ceased, *i. e.*, in July, 1897. Six months later the eyeballs began to be prominent; at same time there developed flushings of heat all over body, palpitations, headache and weakness, tremor of hands and feet, especially on rising in morning, frequent distress in stomach. In

the summer of 1898 constipation was replaced by chronic diarrhea. In February of this year she had a severe attack of diphtheria and was cared for at Mt. Sinai Hospital. On recovery from this she felt much better for a time. The thyroid gland was only moderately enlarged and appeared to be slightly larger in the morning at the time the tremor and diarrhea occurred. There was marked accentuation of both cardiac sounds over tricuspid, but not at mitral; no murmurs at heart, but systolic murmur at carotid; pulse 120; respiration 24. Sphygmogram regular, rapid, with normal dicrotism. Complaint of constant aching in upper dorsal region between shoulder-blades, region of columns of Clarke. An attempt at a complete milk diet rendered the patient very weak and miserable and increased the tachycardia to a point where the pulse could not be counted. The urine was examined by Bouchard's method twice during the winter, once in February and again in March. On the first occasion the toxic coefficient was .579, on the second, .712. The patient had been treated by various nervous and vascular tonics before she came under observation without material benefit. The ordinary line of medication was abandoned altogether and disinfection of the intestinal canal was practised. Various disinfectants were used at different times during a long period, bismuth salicylate and betanaphtol, associated with a daily flushing of the colon with two quarts of water. Under this treatment, especially the colon flushings, the diarrhea was arrested, the patient grew steadily stronger and the menstruation returned on April 15, 1899, after an amenorrhea of twenty-two months. The week before this appeared a third examination of the urine gave a urotoxic coefficient of 1.426, nearly double the toxicity found in March. For eleven months the pulse remained at 120. On April 21st the patient was feeling very weak, with much headache and anorexia, and the urotoxic coefficient was .388, the only time at which it was subnormal or any other than excessive. On March 27th, after an experiment with thymus gland, the coefficient was 1.662; menstruation occurred three days later. After this it was absent until January, 1900, when it returned and has occurred regularly ever since. The last urinary examination was made May 22, 1900, and the coefficient was then nearly normal, being .432. The pulse remained at 120 or over with scarcely an exception for eleven months, when, on January 24th, it became 100 and did not change in spite of an attack of diarrhea and insomnia. On February 7, 1900, the medication was changed to salicylate of soda of which from 60 to 80 grains a day were given. After ten days the pulse was 93; ten days later, 92; on April 4th, 90, June 4th, 90. An intercurrent attack of diphtheria, treated at home by muriate of iron, had the effect of lowering the pulse to 90.

In the discussion Dr. E. D. Fisher said that this case shows a very vascular condition of the thyroid gland. He did not absolutely agree with Dr. Jacobi in the use of intestinal antiseptics. He had found the continued use of strophanthin successful. That treatment might be carried out in a case of this kind. Dr. Wm. H. Porter treated two cases of a similar nature at his clinic by antisepsis of the alimentary canal, to prevent toxic infection, with better results than had been obtained under other treatment for that class of cases. Dr. Wm. H. Caswell said that glycero-phosphate of soda, 15 grains three times a day, had been efficacious in one case under treatment. The pulse has fallen from 130 or 140 to 84 or 88 and remained so for the past two months. All constitutional symptoms were very much improved, although the exophthalmus had not disappeared, nor was there any decrease in the size of the thyroid. The patient was better and was still doing well.

Dr. Jacobi spoke of the question of the urotoxic coefficient, although he said he had not paid any systematic attention to it. He had noted that when the urotoxic coefficient was in excess of normal, the patient was better. On one occasion it fell below normal and the patient was decidedly weaker, with symptoms of more constitutional poisoning, confirming the idea that poison circulating in the blood and excess of urine toxicity coexist with the effort of the organism to throw it out. When the toxicity is high, the patient is better; when subnormal, the patient is worse. This is approximate.

Congenital Hydrocephalus, Non-Inflammatory Type.—This case was presented by Dr. Joseph Fraenkel. He thought it worth while to bring the case as it seems unusual in its clinical pathology and he was in doubt as to the best diagnosis. The child, twenty-six months old, was born at full time without difficulties. Father aged thirty-six, mother thirty, Russian Hebrews, perfectly free from taint. Three living children perfectly well. One miscarriage prior to birth of this child. Immediately after birth it was noticed that the child was abnormal. It did not hold its head up and gave no evidences of mind or brain development. The symptoms became more accentuated. At no time has it walked, talked or shown any signs of mental vigor. Obstinate constipation has existed since birth. All examinations have given a negative result. There are no evidences on the skeleton pointing to rachitis. The upper and lower extremities are rigid; permanently contractured, but the contracture can be overcome and the reflexes are present. No ankylosis; reflexes not exaggerated as would be expected. The child vomits, and has had three or four general convulsions. After the last one the child lost its voice for three or four days. Sensation in so far as it can be examined is negative. The head is somewhat large, 46 anthropometers in circumference, although not so large as in hydrocephalic infants usually. The fontanels are not closed. Child was put on iodide of potassium and syrup and iodide of iron and was thought to improve, but objective examination showed no improvement.

Dr. Fisher agreed with Dr. Fraenkel's diagnosis of hydrocephalus, non-inflammatory type, congenital. One case which he had seen showed a congenital condition of interference of the circulation through the fontanels to the spinal cord. Dr. Jacobi asked if there might not be a correlation between the small head and the severity of the symptoms. For some reason the skull had not yielded, thus causing greater intercranial pressure than in ordinary cases where the skull is large and necessarily the pressure less. Dr. Lewis A. Connor said that the question of increased intercranial pressure can be determined by puncturing and the use of the monometer to measure resistance. A monometer may be improvised by using a bent glass tube with a short horizontal arm and a long perpendicular one, and attaching it by a piece of rubber tubing to the cranium. Dr. Peterson said that the fontanels being open would seem to show that there is not unusually great pressure. It does not look like congenital hydrocephalus. In that disease there should be an unusual growth of the head. He had seen this rigidity resulting from basilar hemorrhage occurring during labor.

Multiple Neuritis Following Pneumonia.—Dr. Connor presented this case. The patient, male, forty-one years of age, came to the Hudson Street Hospital on November 7th with a lobar pneumonia of five days' standing, with typical history and physical signs. The consolidation involved left upper and lower lobes and ran a normal course up to the point of deflorescence. Instead of clearing up at the end of the seventh or ninth day, the temperature dropped and the consolidation remained, presenting the ordinary picture of delayed resolution, lasting two weeks beyond the allotted period. During that time the patient gave no evidence of any other trouble. Just at the end of this period of consolidation, three weeks from the beginning of the attack of pneumonia, it was noticed that his legs were weak and that he had some discomfort in moving them and the left arm extensors were paretic. In the course of a week the following picture was developed: Extensive, almost complete paresis of the extensors of the leg, tibialis group and peroneal muscles, extensors of the left arm and slight loss of power in the right arm. No anesthesia. Some numbness of the tips of the fingers and an area of hyperesthesia over the crest of the iliæ on both sides. Almost no pain except girdle sensation. Tenderness over the calves of legs and arms very slight. Diaphragm was not moving properly and in about a week from the beginning of symptoms of paralysis, there was complete loss of function of the diaphragm, with either forced or natural respiration. It was a severe multiple neuritis which ran a course of five weeks before any improvement could be noticed. He can now walk about and has recovered very largely the use of his left hand. It was six weeks from time of disappearance of function in the diaphragm before the first contraction could be recognized. So severe a neuritis is very unusual in lobar pneumonia. It is recognized as a possible complication, but an unusual one, and in those cases personally observed the neuritis has been local or else of a mild type. The man's history is good as far as syphilis or tuberculosis is concerned. He has been accustomed to drink three or four glasses of beer or ale in the course of the day and, two or three times a week, a glass of whiskey. The picture has not been that of alcoholic neuritis, nor were the sensory symptoms less marked than they usually are in these cases.

Dr. Cunningham asked what was the state of the pulse during this attack. Was the vagus involved? Dr. Connor replied that it had remained normal. Only the pupils were involved. Dr. Cunningham said that in alcoholic neuritis the vagus invariably is affected several days before the diaphragm is involved.

Dr. Jacobi asked if it were supposed that there was any infection by continuity of inflammation from leg to the diaphragm, affecting the phrenic nerves. Dr. Connor said his idea was that it was purely a matter of toxemia, delayed resolution, long-continued condition of consolidation with the growth of the specific bacterium. This was a case of toxemia sufficient to produce this result, taken in conjunction with the damaged condition of the nerves from his alcoholic habit.

Dr. Peterson said that Dr. Connor's case was quite unusual; it certainly was one of simple multiple neuritis following pneumonia. The moderate alcoholism might not have been sufficient to produce neuritis, but the added toxic condition of the blood caused by the pneumonia was sufficient to bring it about.

Progressive Muscular Atrophy.—Dr. Caswell presented the case of a young woman, twenty-one years of age, who came to the Vanderbilt Clinic seeking treatment for weakness in the hands. She is a maker of artificial flowers. Five or six months previously her hands began to fail and she could not work so easily as before. On investigation it was found that from the time she was a young girl she had had difficulty in closing her eyes, and she did not smile and use her lips and mouth as other children did. She was not conscious of this and only complained for the past few months that her hands failed at work. Examination showed a case which in almost every particular conforms to the type of primary progressive dystrophy described by Landouzy-Dejerine—beginning in the face with no hypertrophy, the atrophy showing later in the upper extremities. The lower extremities were fairly well developed for a thin girl. The arms from elbows to fingers were not atrophied. From elbows to shoulders there was marked atrophy on both sides. Pectoral muscles about the triangles of the neck were decidedly wasted and fallen away. When the arms were turned backward the superior scapulæ going into the triangles of the neck can be seen on both sides; when the hands are put forward, the scapulæ are winged. This is due to the atrophy and weakness of the

lower portion of the trapezius and deltoid. The face is myopathic. The onset of this disease is very insidious. Until the patient notices something which interferes with daily employment or manual labor he does not seek treatment.

Dr. Fraenkel knew of a case which has existed for any number of years. It has been stationary for seven or eight years. Some additional symptomological movement may excite it, and the advance of the disease will be brought to the attention of the physician. One may find slight indication of paralysis of the face; the disease stops there without fresh clinical manifestations.

Dr. Caswell spoke of another case of this kind at the Vanderbilt Clinic which had progressed very slowly during the past five or six years. The changes in the face were very slight, but it was gradually growing worse; the patient does not notice it, however.

Dr. Peterson said that he did consider the Landouzy-Dejerine type very rare up to two years ago, rarer than the Erb juvenile form. Within the past two years he had seen four cases of perfectly typical syndromes. The history is usually indefinite except as to the eyes. Patients have never remembered being able to close the eyes. This led him to suggest that some cases occasionally met with, of bilateral lagophthalmus, might turn out to be this disease. Several years ago he thought this form a variation of the Erb juvenile type. Now he thinks it is a different syndrome with a different pathological basis.

Progressive Muscular Atrophy.—Dr. Leopold Stieglitz presented a man, thirty-three years of age, born in Germany, who came to this country four years ago; father died of heart disease; mother, one brother and four sisters living; knows of no similar trouble among them. He cannot state exactly when his present trouble began. Has noticed for some years weakness in the legs, inability to lift them properly from the ground, difficulty in walking, and that he tired easily. This condition became steadily worse. The patient was seen four years ago at Mt. Sinai Dispensary. Upon examination there was very profound atrophy of the peroneal group of muscles in both legs, no disturbance of sense, slight signs of reaction of degeneration. The case was entered as one of the peroneal type of progressive muscular atrophy. Last February the patient returned to the dispensary complaining of weakness in the arms. Examination then showed that in addition to the affection in the legs there was a very pronounced typical condition of progressive muscular dystrophy of the body. The atrophy involved also the gastrocnemius muscle of the calf and to a certain extent the muscles of the thighs. On both sides there was atrophy of the pectoral, hypertrophy of the deltoids on both sides, wasting away of the upper arms, typical drop-foot and atrophy of the lower extremities. The diagnosis was peroneal and juvenile types of progressive muscular atrophy or dystrophy. The electrical reactions, however, did not correspond to those one would expect in a case of this kind. They were normal in the upper extremities, absent entirely in the lower. The patient has winged scapulæ, protruding abdomen, kyphosis of the back; all indicative of progressive muscular dystrophy.

Dr. Fraenkel said that three types of dystrophy are shown in this patient. The remarkable feature is the absence of any heredity. This condition is unusual at so late an age. He is very flabby.

Dr. Peterson agreed with Dr. Stieglitz that it was the juvenile type. He thought that there was a marked distinction between the juvenile and the Charcot-Marie-Tooth forms. The two syndromes are not alike. One peculiarity is that the legs below the knees are affected. In this patient the thighs are affected as in the Erb-juvenile form. The pathology is the same in this case. It is not apparent why in the Erb-juvenile form other muscles than those of the shoulder girdle are not involved.

Dr. Stieglitz spoke of the unusual feature of the commencement of the disease in the lower extremities. He had looked up a number of histories and could find nothing that exactly corresponded with this case. The involvement of the lower legs was not so unusual, and in this case simply the muscles below the thigh sequence were involved. Atrophy of the muscles of the thigh is common in progressive muscular dystrophy. He thought that one should distinguish between the Charcot-Marie-Tooth and Landouzy-Dejerine types on account of the difference in pathology; one is a disease of the trunk nerve of the cord. The Landouzy-Dejerine type is purely myotropic. On that account one should not try to connect the two syndromes. The family history should be carefully investigated, for the statements of the patient are sometimes misleading.

Hereditary Cerebellar Ataxia.—Dr. M. Mailhouse presented this case. The patient, F. F., was admitted to the New Haven Hospital January 13, 1900, with the following history: Age, thirty-two years; single; birthplace, United States; occupation, postal clerk; father and mother living and well; has five sisters living all in good health. One sister died of pulmonary tuberculosis and another died in infancy of causes not stated. Mother's mother also died of pulmonary tuberculosis. A sister of his mother is at present an inmate of the Connecticut Asylum for Insane. Mother and father have had muscular rheumatism. Patient had scarlet fever and diphtheria at fifteen years of age. When a boy had rheumatism of mild degree. In 1887 had sunstroke which left him confined to his bed. No syphilis, alcoholism or tuberculosis. The history taken on his admission to the hospital states that the patient first noticed in 1887 a dragging of his toes on walking and that his shoes curled up and were worn at the toes; did not walk with a stamping gait and could direct his feet anywhere without trouble. Legs did not cross on walking.

On closing his eyes while standing was unable to keep his balance. Had no pain in the legs but considerable backache. Then his hands began to tremble (1888) and his legs shook on walking. These symptoms increased and he had to use two canes in walking in 1888; in 1889 he used a crutch and one cane, and in 1890, two crutches. Has lost 57 pounds in weight within the past ten years. Has headache off and on, not severe. He also states that when twenty-one years of age he noticed an inability to run; he could walk but when he ran his legs got mixed up as though they were playing cross tag with one another. For past four or five years erections have been incomplete, and one time had frequent urination.

Status Praesens.—A man above medium height, of good frame, but somewhat emaciated. A striking feature as he stands supported by his two crutches is the nodding tremor of his head which is aggravated by walking. There is marked asymmetry of the head, a flattening of the occiput and pronounced sloping of the forehead with considerable flattening over the left parietal region. There is some facial asymmetry also as evidenced by a greater prominence of the right supraorbital arch than of the left. The nose is directed toward the right and the left palpebral fissure is smaller than the right. His gait is markedly ataxic, but he is able to get about fairly well on a level with the aid of crutches, but loses his balance readily on attempting to ascend a step. There is absolutely no muscular weakness in his legs. The knee-jerks are present, but not exaggerated. There is no ankle-clonus. The Romberg symptom is present and he is supported with difficulty when he stands with closed eyes. There is no impairment of sensation of any one of the forms, from head to toe. His movements are quickly performed, jerky, as is observed when he attempts to touch the tip of his nose with the index finger, the eyes being closed. The ataxia of the upper extremities is much less evident than in the legs. His speech is noticeably affected, but changes, being at times scanning or staccato and at others characterized by indecision and unsteadiness in the muscles of vocal expression; it is decidedly an ataxic speech. The pupils react neither to light nor accommodation. There is marked lateral nystagmus and on looking upward a rotatory mystagmus; when the eyes are at rest there is no oscillation. There are no contractures and no scoliosis. The grasp of the hands is strong and the muscles of the arms show no loss of power. The pectoral muscles are wasted, otherwise no atrophies are present. There is no optic atrophy and no limitation of the visual fields, but he is myopic, requiring a lens of seven diopters. The superficial reflexes are present, the plantor being very active. Urine presents no abnormality. The handwriting is like that of a tabetic. A review of the symptoms reveals the marked ataxia of the whole muscular system without any paralytic phenomena. The case resembles Friedreich's ataxia in its mode of development and general appearance, but differs from the typical disease in its later onset, in retaining the knee-jerks, in the late and mild affection of the arms, in the loss of the ocular reflexes, and in the absence of contractures or paralysis; the man has been afflicted twelve years and there is no paralysis or contracture present. The question might arise as to its being a multiple sclerosis, but this affection can be ruled out by the mode of onset, it being ataxic rather than paraplegic, by the normal reflexes and sensory phenomena and the absence of intention tremor. Furthermore, the long duration of the illness without any paralyses, ocular or corporal, militates against such a diagnosis. The case was presented not as an argument in favor of the type of hereditary cerebellar ataxia, but rather as a clinical example of ataxia presenting such a symptom-complex..

Dr. Caswell said that in the form of ataxia described, the fundus is generally affected; there is more or less neuritis, the knee-jerks are increased, and in this way discrimination is made between cerebellar and ordinary ataxia.

Dr. Fisher thought the sunstroke may have had something to do with the condition. He remembered a case of sunstroke followed by symptoms of this type, resembling compound or multiple sclerosis, but not conforming strictly to either. Taking that as an etiological factor, there is ordinarily some meningitis, some change affecting the cortex of the brain leading to the ataxic symptoms. Also ataxia, incoordination of the muscles, spastic condition of the patient—a degenerative condition secondary to some such lesion as that produced by sunstroke.

Dr. Peterson had examined the man before the meeting and thought that the diagnosis lay between multiple sclerosis and cerebellar hereditary ataxia. He was inclined to think that Dr. Mailhouse is right in his diagnosis of cerebellar-hereditary ataxia on account of the pupilary condition—no reaction to light—and because he has more of an ataxia than tremor of the ordinary sclerosis type.

Dr. Wm. B. Pritchard asked if there was anything of note in the subjective history of this case with reference to vision, hearing, or persistence of vertigo or headache that added to the data. Dr. Mailhouse said there were no subjective symptoms at all, except backache and difficulty in manipulating the legs. He is strongly myoptic without optical strain.

Raynaud's Disease of Gangrenous Type.—Dr. Wm. H. Porter presented this case. The patient came to this country some years ago; for a year or so was a hod-carrier, then went into an iron foundry where he has since worked. Has a very pronounced alcoholic habit, uses tobacco to a considerable extent. In the middle of April he noticed that the fingers of both hands were very white and icy cold. This lasted for two weeks and was followed by superficial gangrene, discoloration and blackness of the four fingers of both hands, a little discoloration of the left ear, and a spot on the opposite ear. This con-

dition had lasted for ten days before he came to the hospital. He suffered intolerable pain and got very little sleep. The urine showed slight traces of albumin, a decrease in urea and pronounced amount of indican. The patient had a very high pulse and was given doses of nitroglycerin with strychnine and caffein to improve the circulation. Lead-and-opium dressing was applied and gave relief.

Dr. Pritchard said that this patient was under his care for three or four weeks. At that time the man had, in addition to the symptoms mentioned, extreme edema of the hand, extending beyond the wrist. He had almost the national combination of colors—blue finger-tips, red hand, white arm. He was not relieved by the lead-and-opium applications made in varying strength and by various local means. To him the patient admitted a rather gross alcoholic history and he was of the opinion that this was an etiological factor of some importance, possibly intensified by extremes of heat and cold to which he had been exposed. His sufferings were horrible. Opiates in moderate quantities to modify the intensity of pain were used. He had improved.

MEDICAL ASSOCIATION OF THE GREATER CITY OF NEW YORK.

Stated Meeting, Held Monday, October 8, 1900.

The President, Robert F. Weir, M.D., in the Chair.

Hydrotherapy in Typhoid Fever.—Dr. S. Baruch read this paper. He stated the only absolutely reliable statistics in medicine are those relating to the Brand method of treatment. Vogel's statistics at the Military Hospital in Munich covered a period of fifty years, and showed a reduction of the mortality from 20 per cent. under other methods to 2.07 per cent. under the Brand treatment. While this plan of treatment has been generally adopted in the hospitals of this country, it has not as yet met with its deserved acceptance in private practice. The success of cold bathing is due to its marked reduction of the lethal complications of the disease. With reference to the cold bath as a means of diagnosis, he said that any patient with a temperature of 103° F. for three days should be first sponged over the trunk and thighs, commencing with water at a temperature of 85° F., gradually reduced to 65° F. He should then be taken to the bathroom and given a bath in water at 90° F., lasting fifteen minutes. Four hours later the bath is to be repeated at a temperature of 85° F.; four hours afterward at a temperature of 80° F., and four hours after that at a temperature of 75° F. If in half an hour after the bath the temperature of the body is reduced two degrees it can be concluded that the case is not one of typhoid; but if in half an hour the reduction does not exceed one degree, the diagnosis of typhoid can be made. A tin bathtub should then be procured and placed by the side of the bed. Having described the manner of giving the baths, he said that if reaction is poor this can be efficiently aided by the addition to the bath of Nauheim salts, in accordance with the suggestion of Dr. Thomson. If for any reason the use of the cold bath is impracticable or inadvisable, various substitutes for this might be resorted to. It should always be borne in mind, however, that the more nearly the method of treatment employed approached the regular Brand treatment, the greater would be the prospect of success. He spoke of ablutions and then of affusions, and said that the latter may sometimes be advantageously combined or alternated with ablutions. Affusions were employed as long ago as 1795 by Curry of Edinburgh, and in the form of what was known as "slush baths" were used with excellent effect in the recent Spanish-American war. Having referred to the sheet bath and towel bath, he read a letter recently received from Dr. Hobart A. Hare of Philadelphia in which the latter described the ice-rub, as practised by him. It has this advantage over the tub bath, namely, that cold and friction can be applied to the great muscles of the back and thighs, which are great generators of heat. The aim of all cold-water methods, he went on to say, is not to depress, but to refresh, and, if properly applied, there will be no shock, no cyanosis, no chattering of teeth. Various procedures should be resorted to according to the varying conditions present. In a case of hypostatic pneumonia complicating typhoid, where there was cardiac adynamia due to sepsis he had used the wet compress with the most happy effect.

In the discussion of the paper Dr. Ransford Van Gieson of Brooklyn said that, after a very extended observation, he could safely say that there is no other method of treatment that in its results at all approaches the typical Brand treatment. Sometimes, however, it is impossible to overcome the prejudices of patients or their friends against the full cold bath, and then we have to resort to substitutes. One method that he has found very efficient is the use of rubber sheeting. This is arranged in the shape of a trough, and affusions made over the patient. He has also used ice-friction with excellent results, and, as it is very difficult to hold a piece of ice in the hand or with a towel, he has devised a simple spring clip, with a wooden handle, for the purpose. The ice should be passed rapidly over the surface.

Dr. Baruch said he does not claim that all patients can be saved by the Brand method, but only that it is, as statistics show, the best treatment that had as yet been found for typhoid; and, moreover, that no patient had ever been killed by the treatment when it was properly given.

Hypospadias.—Dr. Carl Beck read a paper with this title. He gave a brief historical résumé of the subject, and spoke particularly of the achieve-

ments of Dupuytren in remedying the condition. He then described his own special operation, which was first performed in May, 1897. Instead of forming a new urethra, he utilizes the urethra already existing. The *modus operandi* of the procedure is based on the great mobility of the structures of the penis and the expansibility of the urethra. He described in detail the technic of the operation and a number of modifications applicable to various conditions, and stated that the younger the subject the greater the dimensions that can be obtained in the urethra. Dr. Beck presented three patients who had been successfully operated upon—one of them being an infant only five months old.

Dr. John H. Branth referred to so-called hermaphrodism, and mentioned a case he had the opportunity of examining twenty-five years ago which had been pronounced by Virchow and other observers one of real hermaphrodism. This was a mistake, however, as the patient proved to be a male, and Dr. Branth stated his conviction that there was no such thing as a true hermaphrodite.

Dr. Beck then said that several years ago he presented at the Surgical Section of the New York Academy of Medicine a patient who was a true hermaphrodite, the condition being afterward verified by autopsy.

NEW YORK ACADEMY OF MEDICINE.—SECTION ON PEDIATRICS.

Stated Meeting, held Thursday, October 11, 1900.

Thomas S. Southworth, M. D., Chairman.

Muscular Pseudohypertrophy.—Dr. Sara Welt Kakles presented a case of this rare dystrophic disease. The patient is about six years old and the pathological condition was first noted some two years ago, but probably existed even before that and began between the second and third year. In the matter of treatment very little can be done. Something can perhaps be accomplished by prophylaxis. The disease is prone to run in families, and marriages between families in which tendencies to it exist should be discouraged. Children of parents in whose families cases of pseudohypertrophy have occurred should be carefully protected from trauma and from infectious diseases. Sometimes the course of the disease seems to be rendered slower by hydropathic remedies with electricity and massage, care being taken, however, not to irritate excessively the weakened nerves. In discussing the case Dr. Charles Herman said that young children who have suffered severely from rickets may sometimes be observed to raise themselves from the floor by climbing up on themselves, as do these pseudohypertrophic patients. The disease is said to begin at about the sixth year. Some weakness of the limbs has usually been noticed before this, however, and the disease probably begins much earlier in life than is thought.

Fibrinous Pericarditis.—Dr. Bovaird presented the specimens from a case of meningitis with many complications. The first symptom was a pneumonic patch in the left lung. Then a stiff neck was noted and a spasmodic condition in the musles on the right side. Meningitis was suspected. After this had continued for a day the child died and the autopsy revealed a fibrinous pleurisy with an exudate over an eighth of an inch in thickness covering the pleura. There was a fibrinopurulent pericarditis, but the surprise of the autopsy was a thick exudation of purulent character extending all over the brain and cord. The pathological condition had evidently existed for several days at least, yet the first symptom of meningeal trouble was noticed only twelve hours before death. It is not unusual, however, for extensive nervous lesions to exist in very young children with very slight symptoms. It is a warning not to give too favorable a prognosis in children's ailments.

Symposium on Antitoxin.—Dr. Henry F. Koester, Medical Inspector of the New York Department of Health, read a paper embodying the conclusions formed after six years of experience with the antitoxin treatment of diphtheria. He said that his present attitude toward diphtheria is very different from that of ten years ago. Then diphtheria was a dreaded disease. Now he can be sure if he sees the case during the first forty-eight hours that it will be better in forty-eight hours. His present custom in suspicious throat affections is to give antitoxin and then make the bacteriological test for the disease. Should the test prove that the disease is not diphtheria no harm is done, whereas if the bacteriological examination is positive the disease is throttled at the very beginning

Antitoxin Dosage.—The dosage of antitoxin should be regulated rather by the extent of the disease and the length of time it has existed than by the age of the patient. Dr. Koester considers that 2000 units should be given to mild cases; from 3000 to 4000 if the uvula and tonsils are affected; from 4000 to 5000 if the nares are involved. All laryngeal diphtheritic affections must, of course, be considered as severe cases and must receive the higher doses. If the diphtheritic deposit on the pharynx fails to disappear, then the dose of antitoxin should be repeated, but not otherwise. In all septic conditions from 5000 to 6000 units of antitoxin should be given at once.

Extraoral Diphtheria.—It is often noticed in houses where children are down with diphtheria that other children suffer from nasal discharges or from eye discharges in which, not infrequently, diphtheria bacilli are found. An injection of antitoxin will at once put an end to the discharge and this therapeutic test is the best proof of the real origin of such discharges.

Technic of Injections.—Many people have the habit of making the antitoxin injections into the muscles of the back. This sometimes produces discomfort, however, and there is some slight danger, if the child should move, of the hypoder-

mic needle entering the pleura or injuring some of the internal viscera. If the injection is made into the gluteal muscles these objections do not hold. The child may be easily and firmly held in the requisite position by placing it across the knee with its legs between the doctor's knees. The injections in the gluteal region may be made so deeply as to leave no swelling, whereas in the back swelling remains for some time.

Immunization.—From 150 to 300 antitoxic units are usually given for immunizing purposes, but in tenement-houses Dr. Koester prefers to use from 300 to 500 units because of the insanitary conditions. He has immunized in all some 1800 cases. In 4 cases only did membrane develop in the throats of immunized patients within thirty days after the injection. In one of these true diphtheria developed on the thirtieth day. The membrane in the three other cases proved on bacteriological examination to be due to the streptococcus. Dr. Koester has had complications occur after the administration of antitoxin in but very few cases and then only an urticarial rash that lasted for a day or two.

Accessory Therapeutics.—Certain local measures Dr. Koester believes should be employed in some cases. If an offensive odor is noticed dilute hydrogen peroxide should be thrown into the fauces about every hour with a syringe that holds about an ounce of liquid. The solution should be thoroughly neutral. If it is acid it will irritate the lips and is apt to make the inside of the mouth sore with the result that nutrition is interfered with. Where considerable membrane exists in the nose peroxide should be forcibly injected into the nostrils. During nasal injections older children should be instructed to keep their mouths open so that infectious material from the throat may not be forced into the Eustachian tube. In smaller children the mouth should be kept open by a gag if necessary. Internal medication in Dr. Koester's experience is not advisable. Chloride of iron and chlorate of potash disturb the stomach and fulfil no rational indications. The tonic effect of the syrup of the iodide of iron, however, will often be found to do good. Tonic treatment must be the rule. The child should be encouraged to eat as soon as the appetite begins to come back. It should be given anything that it likes—ice cream, for instance, will often tempt the appetite when everything fails. Dr. Koester has had one child practically kept alive for several days on beer. He does not recommend beer for children's dietary, but the incident shows what out-of-the-way material may prove of service. If the child refuses to eat or drink it is better to feed it through the nose by means of a stomach-tube than to resort to rectal feeding. Calomel inhalations have been recommended by many, but they do no good and are prone to salivate those in charge of the little patient. Steam prevents ventilation and the benefit it affords does not make up for the nuisance that it is. After intubation only water should be given for twenty-four hours, after which the greatest care should be exercised in the giving of food until the child becomes accustomed to swallowing it without allowing any of it to get into the lungs. In severe cases the heart will usually need some stimulation. The maintenance of the circulation will prove, too, a prophylactic against the development of bronchopneumonia. The itching of urticaria should be treated in order to avoid the restlessness which it induces. A mild carbolic ointment is the best for this purpose.

Quantity and Grade of Antitoxin.—Dr. William H. Park, Assistant Director of the Research Laboratory of the New York Department of Health, said that the tendency of the present day is to use large doses of antitoxin. In Boston doses which in New York would be considered excessive have been given without any bad effects resulting, although these have been carefully looked for. During the months of August and September alternate cases of diphtheria admitted to the Willard Parker Hospital, irrespective of the severity of individual symptoms, were treated with 1000 and 2000 units of antitoxin each. It must be borne in mind, of course, that antitoxin is not a drug, but a substance which neutralizes the diphtheria toxin. One thousand units is not a small dose. It is sufficient to neutralize the toxin in two liters of bouillon culture of a virulent diphtheria bacillus. It would suffice to protect 100,000 guinea-pigs against a fatal dose of diphtheria toxin. We wish, therefore, to use only the amount of antitoxin that will be sufficient to neutralize the diphtheria toxin present in the system of the patient. Antitoxin is a powerful remedy and its exact dosage would be an important therapeutic advance.

Statistics of Cases.—In all 93 cases admitted to the Willard Parker Hospital suffering from diphtheria died or were discharged during the months of August and September. As was stated, each second case received twice the dose of the preceding one, that is, 2000 units. There was no marked difference in the mortality of the two series of cases. It was found, too, there were no more complications after the larger dose of serum than after the smaller ones. Urticarial rashes were not more frequent and there were no joint or kidney symptoms that could be attributed to the antitoxin. There was some difference in the morbidity of the two series of cases. The symptoms did not clear up so fast in the case in which the smaller doses were given. There was also an impression produced that some of the fatal cases might have been saved if still larger doses of antitoxin had been given. At the Willard Parker Hospital the effects of still larger dosage, 4000 and 6000 and even 8000 units, have been compared. As the result the following conclusions seem to be warranted: In mild cases of diphtheria, seen during the first twelve to eighteen hours of the illness, give from 1000 to 2000 units; in moderately severe cases give from 2000 to 3000 units; in severe cases from 3000 to 5000; all laryngeal cases should be given about 5000 units. If there is no change in the symp-

toms repeat the dose in eighteen hours. Give the first dose at once if diphtheria is suspected. Do not wait for the result of bacteriological investigation. The patient's throat, rather than the temperature or general condition, should be the standard by which the dose of antitoxin is determined.

Quality of Antitoxin.—The serum of any trustworthy manufacturer should be used provided, of course, that it be fresh. With any serum rashes may occur and there seems to be at present no way of avoiding them, although there did seem some hope that the quality of antitoxin in this respect might be improved or that other ingredients in the serum besides the true antitoxin were responsible for the untoward effects and that they might be eliminated. A globulin has been extracted from diphtheria serum which contains all the antitoxic property, but which gives no more assurance of not causing rashes than does the whole serum.

Antitoxin in Boston.—Dr. John McCullum, Resident Physician at the Boston City Hospital, discussed the present state of opinion with regard to antitoxin according to experience in Boston. In 1890 diphtheria was the seventh on the list of fatal diseases in Boston's death-rate. In 1899 it was the sixteenth on the list. There has been since the introduction of antitoxin a marked and continuous diminution of the death-rate from diphtheria in the city. This is more noticeable than in any of the other large cities—Glasgow, Liverpool, Paris, Berlin, or London. Whereas the death-rate from diphtheria was over 35 per cent in 1881 it was only 10 per cent. in 1899. The death-rate of intubation cases in the Boston City Hospital has been reduced from 87 per cent. to 32 per cent. In the Willard Parker Hospital in New York the average mortality of intubation cases has been reduced from 85 to 52 per cent.

Large Doses of Antitoxin.—Much has been said about the dangers involved in the use of antitoxin. To some minds this is the main objection to its use. In a series of cases in the Boston City Hospital very large doses of antitoxin have been used, not only without producing any bad effect, but in reality saving patients from what seemed an inevitable fatal termination. Dr. McCullom then reported a series of cases in which from 30,000 to 60,000 antitoxin units had been used in the treatment of diphtheria. In one the child came in on the fifth day practically moribund; 4000 units were given at once and this dose was repeated every three or four hours for several days until 60,000 units had been injected. The patient recovered and suffered from no unusual complications. In a second case the patient was in the sixth day of the disease, a delicate child of only eight years, with an abundant mucopurulent discharge from the nose and a very disagreeable odor. Some edema of the face was already noticeable. In four days 40,000 units of diphtheria antitoxin were administered and the child recovered. A mild urticaria resulted, but the albumin that was in the urine when the child entered the hospital disappeared during the course of the injections of antitoxin. In this case some palatal palsy was noticed and an irregular heart action, but after a little time these disappeared. In a third case a pair of hypertrophic tonsils were completely covered by diphtheritic membrane which had also invaded the nostrils in the back of the pharynx. The treatment was not begun until the fifth day of the disease and 52,000 antitoxic units were given during the five days of active treatment. In a case brought into the hospital on the fourth day of illness and in which ordinary doses of antitoxin had had no effect, 35,000 antitoxic units were given in large doses at short intervals and improvement soon began, followed by ultimate recovery. In a fulminant case of diphtheria, seen for the first time on the third day, in which there was intense prostration and everything pointed to a rapidly fatal issue, 50,000 units of antitoxin seemed to bring the patient back from the verge of the grave.

Technic of Large Dosage.—No rule can be given as to the amount of antitoxin that should be given in severe cases of diphtheria. Beginning with from 300 to 500 units, the dose should be repeated every four to six hours until the diphtheritic membrane begins to shrivel, the odor of the discharge to modify, and a favorable reaction in the general condition sets in. No bad effects were noticed from these large doses, although the condition of the patient was carefully watched in order to obtain assurance on this point. Dr. McCullom has never seen a death from diphtheria where antitoxin was administered during the first twenty-four hours of the disease. If 4000 units of antitoxin are administered as soon as a suspected case is seen, the diphtheria will not last long and there will be no heart complications. It has been objected that antitoxin produced albuminuria. In over 600 cases the urine of diphtheritic patients was carefully examined for albumin. In no case was there an increase of the albuminuria so frequently present during diphtheria and in no instance did a suppression of urine occur after the administration of antitoxin. Where the antitoxin treatment was begun early there was always less albuminuria at a given stage of the diphtheria than would be regularly found in an untreated case.

Hospital Diphtheria.—One hundred and four cases of diphtheria have occurred in the Boston City Hospital in members of the medical or nursing staff since the introduction of the antitoxin treatment. In every instance the cases have been treated at once with antitoxin; there has not been a single death and recovery has been rapid.

New Bacterial Laboratory.—The contracts for the new laboratory of the city of New York for the study of the bacteria of plague and other infectious diseases have just been let.